

MAR 6 1939



American Foundryman

ACTIVITIES



March
1939

Cooperation With Engineering Schools



GRAY CAST IRON as an engineering material has made tremendous progress in the last decade. If this progress is to continue, there must be developed better grades of gray iron than are now being made, and a more thorough understanding of the fundamental nature and properties of all gray irons must be acquired. As widespread research in the field of steel metallurgy has resulted in great improvement in the quality and dependability of steel, just so extensive research in gray iron will improve its quality and increase its field of application.

The Committee on Cooperation with Engineering Schools was organized by the A.F.A. Gray Iron Division to stimulate the staff members of the engineering schools of the country to do research work in gray iron. This was begun two years ago by sending an appeal to these schools to undertake some investigation in gray iron metallurgy. Along with this letter there was sent a list of thirty-five research problems covering melting, structure and properties of gray iron. Twelve schools have definite plans to work on twenty one projects, and many more schools have expressed a desire to cooperate in this program in the near future.

Cooperation with engineering schools is further promoted by chapters of the Association through holding regional foundry conferences at these schools. Then for several years at the annual A.F.A. convention, our committee has provided a place on the program for a meeting of engineering instructors, especially those dealing with foundry practice and research.

We are looking forward to three distinct results of this committee's activities: (1) the benefits to the foundry industry of many trained scientists assisting in the solution of its problems, (2) greater understanding and cooperation between the faculties of engineering schools and the foundry industry, and (3) that more personal interest in foundry problems in engineering schools will be reflected in an increase in the number of graduates who wish to make foundry engineering a life work

Frederick G. Seifing

F. G. SEFING, Chairman,
Committee on Cooperation with
Engineering Schools.

Fred G. Seifing, chairman of the Committee on Cooperation with Engineering Schools, is research metallurgist, International Nickel Company, Bayonne, N. J. He has served on various A.F.A. committees and while serving on the staff of Michigan State College was instrumental in starting the regional conferences now held annually at East Lansing, Michigan.

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American Foundryman



C O N T E N T S

March, 1939

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On Convention
Inspection Trip

★
Cincinnati Milling
Machine Company
Foundry

Cincinnati Convention to Feature Plant Visitation

DURING the week of May 15 to 18, Cincinnati for the first time since 1909 will act as host to the annual convention of A.F.A. In anticipation of this responsibility the recently formed A.F.A. chapter (see page 15) is organizing local convention committees, with special attention being given to preparation for plant visitation.

Plant Visitation

While many of the important industrial plants of the city will be open for inspection during Convention Week, the entire afternoon of Monday, May 15, will be given over to a general group works visit to the machine shops, foundry and training school of the Cincinnati Milling Machine Co. This company which was started in 1884 is one of the country's largest manufacturers of machine tools. This plant has more than 16½ acres of floor space and produces a large number of types of milling, broaching, grinder, die-sinking, lapping and cutting machines of both standard and special types. It has an excellently equipped foundry for turning out castings for machine tool manufacture which will be included in the trip.

Convention Headquarters

Convention headquarters and registration will be at the Hotel Gibson. This hotel, together with the Netherland Plaza, will be used for the many technical sessions, round table luncheons and other special meetings of the week.

The program committees have developed a schedule of some 35 sessions. These will cover not only special problems on gray iron, steel, malleable and non-ferrous shop practice and metallurgy but will include many sessions of general interest, such as safety and hygiene, foundry costs, refractories, materials handling, sand research, pattern making, time study and foreman and apprentice training.

Lecture Course

An innovation and a feature of this convention will be the four-session lecture course on Elementary Metallurgy and the Use of the Microscope in the Foundry. This will be given by R. M. Allen of Bloomfield, New Jersey, a noted metallurgist who will be remembered by A.F.A. members for his exceptionally instructive paper before the 1931 convention, on the use of the microscope in the foundry. The material for the lecture course is being prepared in book form, the contents of which will be an elaboration of the 1931 paper with additional sections. The four sessions of this course will cover (1) Fundamentals of Cast Iron Metallurgy, (2) Special Irons, Alloys, etc., (3) Cast Iron Equilibrium Diagram and Heat Treatment, and (4) The Microscope, Special Preparation, Etching and Photomicrography.

Important Exchange Papers

Of special interest on the convention program will be the two papers which are being submitted as exchange papers by European

foundry associations. Of these, one is being presented on behalf of the Institute of British Foundrymen and is being prepared by F. Whitehouse, foundry manager, Newton Chambers & Co., Ltd., Chapelton, England. The subject of this will be—Castings for the British Gas Industry.

The second exchange paper will be presented on behalf of the Association Technique de Fonderie, Paris, and will be given by Georges Delbart, one of the best known French metallurgists, who is connected with the Societe Francaise de Constructions Mecaniques. The subject of Mr. Delbart's paper will be—Discussion of Steel Castings Having High Mechanical Properties.

Time Study

Another convention highlight will be the address by G. J. Stegemerten, Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa. Mr. Stegemerten will discuss—Practical Approach to Motion and Time Study—a subject which is rapidly gaining in importance to foundrymen in connection with determining wage rates and piece-payment plans.

Castability of Metals

Because of the extensive amount of recent work done on determining the castability or fluidity of metals, one entire session has been set aside for a discussion of recent developments in methods of determining castability or fluidity. Three papers

(Turn to Page 4)

AMERICAN FOUNDRYMAN

As One Foundryman to Another

Henry S. Washburn, Vice President, American Foundrymen's Association and President, Plainville Casting Co., Plainville, Conn., in addressing the January meeting of the Northeastern Ohio Chapter presented his views on some phases of Association activities. His pertinent comments will be read with interest by those interested in progress through cooperative effort.

Mr. Chairman, Guests and Members of the Northeastern Ohio Chapter:

It is a very real pleasure to be here this evening although I sincerely regret, as you do, that my pleasure is due to the illness of our President, Marshall Post. As his emissary, I bring you, on his behalf and on my own, very cordial greetings from the official family of A.F.A.

When I found that I was to represent Marshall at this meeting, I felt I would like to talk about Association affairs and made a note of various topics. I will confine myself, however, to one subject which I feel is of vital importance to our Association.

What Type of Papers?

In December I attended the monthly meeting of a local foundry group and happened to sit next to a metallurgist who is connected with one of our larger manufacturing concerns operating its own foundry. He has served on A.F.A. committees and has always been an interested member. He expressed the opinion that the papers at chapter, regional and annual meetings presented by metallurgists and engineers in technical language go over the heads of many, and that as we enlarge our membership through the development of chapters in order that the junior superintendents and foremen may attend more meetings, we should have as speakers a much larger percentage of practical foundrymen who could talk in plain language about every-day foundry problems.

I am in favor of this latter type of talk but I heartily disagree with the thought that the technical papers go over the heads of these younger men. I represent the smaller foundryman—the type of foundry that does not have its own laboratories. The industry is getting more technical and is being raised to a higher plane. I have been amazed at the way our younger men, many without a technical education, are absorbing the meat of these technical papers.

Let me give you just one illustration, and I take this from personal experience because I would rather speak of something I definitely know than talk in generalities. In one plant with which I am connected there is a young Cuban who came to the States and started as a helper in a foundry. He worked himself up to be a molder and through natural ability has now gone beyond that stage. He has been an intense student of A.F.A. papers, and in April of last year I had him go with us

to a technical foundry session at the Massachusetts Institute of Technology. He did not miss a thing.

As a result of one of those splendid talks by Mr. Dietert on sand control, he started experimenting with synthetic sand and is obtaining excellent results. Last November I met him in New York on the way to the regional meeting at Cornell University. He said he had brought along a sample of synthetic sand and wondered if Mr. Dietert would be willing to take the time to let him explain just what he had done and to advise him on the next steps. Of course, Mr. Dietert was willing and did give him all the time necessary. This young man has also developed a very satisfactory cupola operation.

Not too many years ago, many of us went to the A.F.A. annual convention—first because it gave us two or three days away from the shop, and also because it afforded an opportunity to meet old friends whom we saw only at these annual meetings. A certain amount of time was devoted to visiting the convention exhibits and not too much thought was given to technical sessions. Today these same men, and particularly the younger men, are going over their programs before leaving home and planning their time so they can take in this and that technical session in which they will be particularly interested.

A Greater Liability and a Greater Obligation

This all resolves itself into the fact that as we do attract a larger number of these younger men, they are going to demand more and more from A.F.A., and the Association must meet that demand and that costs money. It means that A.F.A. is assuming more and more of a liability, and as we individually make up the membership of A.F.A., it means that this is also our obligation. It has been the aim of those directing the policies of A.F.A., to keep the dues so low that no foundry would be barred from membership, because they could not afford to pay the required dues. On the other hand, many of us are receiving benefits far in excess of the dues we are required to pay. It was with this thought in mind that the directors, in submitting for your approval a revised set of by-laws, included the new classification of Sustaining Membership so that those who are in a position to do so might have the opportunity through this Sustaining Membership to pay more nearly in proportion to the value they are receiving.

In one of our foundries, during the past year and a half, as a result of improved cupola practice, we are affecting a daily saving on coke of over \$7.00. We pour continuously through the day, and due to the nature of our work, we have a variation in our hourly melt of from four to six tons per hour—a minimum variation of from three and one-half to seven tons per hour. This variation is not all in one direction and we have to fluctuate this

up and down during the day. One serious problem was the inability to hold to proper pouring temperatures. Today, with these same variations in hourly rate of melt, we are holding our temperature at the spout within a 50° limit. I cannot state our dollars and cents saving due to this temperature control, but records of foundry loss on individual jobs very clearly show that the savings are there. We also are able to control the total carbon in our castings to a closer range than I had believed possible in cupola melting, and this is all due to the fact that one of our young men has interested himself in information and help available from his A.F.A. membership.

An Insurance Premium

We have taken out a Sustaining Membership, and I like to feel that we have done it in rather a big-hearted way because of the benefits we are receiving. As a matter of fact, if I am perfectly honest about it, I must admit that we are doing this more in the nature of paying an insurance premium. I know the demands that are going to be made on A.F.A. by members of our organization, and I feel that the Sustaining Membership dues which we are contributing are going to be necessary to A.F.A. if it is to meet these demands.

May I ask you to very seriously consider this matter of Sustaining Membership.

Cooperation

I cannot close without telling the story which you all have read and heard. It is one of Mr. Van Deventer's short editorials, and to me it carries so much of a point that I am going to tell it when-

ever I have the opportunity. You will recall the foundryman that went to heaven and was ushered into the presence of past foundrymen just as they were to sit down to a meal. There were large golden tables loaded with golden plates, heaped with delicious food. As the foundrymen entered to partake of this meal, our friend was surprised to note how emaciated they looked, but soon saw the reason. As each foundryman entered, a long-handled golden fork was strapped to his forearm and hand in such a way that when he took food on his fork from his plate, he could not reach his mouth. Our friend was then conducted to a nearby section where later foundry arrivals were gathering for their meal, but this group looked hale and hearty and well-fed. The same long-handled forks were strapped to their arms, but when they started to eat, each foundryman would take food on his fork and reach over and place it in his neighbor's mouth. The first group were of the old school who took the attitude "I'd rather starve than feed him." The second group had learned the value of cooperation and realized that what benefitted the entire group was of benefit to the individual.

That tells the purpose of our Association; an earnest effort through research and discussion to develop methods and practices that will raise the standing of the industry as a whole, in the realization that that means the advancement of the position of each individual in the industry.

I am most happy to have been able to sit in with you tonight. I congratulate you on the splendid chapter you have developed, and for the coming year I wish you most of the things you desire.

Cincinnati Convention Features

(Continued from page 2)

scheduled for this session are Castability of Cast Steel by C. H. Lorig, Battelle Memorial Institute, Columbus, O.; Effects of Superheating on the Castability and Physical Properties of Gray Iron by N. A. Ziegler and H. W. Northrup, Crane Co., Chicago; Measurement of the Fluidity of Aluminum Alloys by L. W. Eastwood, Aluminum Co., of America, Cleveland, O.

Foreman and Apprentice Training

More attention than usual will be devoted this year to papers on foreman and apprentice training. Three sessions are tentatively scheduled and the speakers on this subject for these meetings will be as follows: A Foundryman's Approach to Foreman Training by W. G. Conner, Jr., Walworth Co., Greensburg, Pa.; Apprentice Training by A. R.

Luebke, Fairbanks Morse & Co., Beloit, Wis.; Apprentice Training at the Cincinnati Milling Machine Company by H. K. Ewig, Cincinnati Milling Machine Co., Cincinnati, O.; Apprentice Training by M. J. Gregory, Caterpillar Tractor Co., Peoria, Ill.

Steel Melting Symposium

A feature of the program for steel foundrymen will be the melting symposium to be held the latter part of the week. The program for the symposium is:

Basic Electric Melting, C. W. Briggs, Steel Founders' Society of America, Cleveland, O.

Acid Electric Melting, W. G. Finster, Reading Steel Castings Div., American Chain and Cable Co., Reading, Pa., and H. D. Phillips, Dodge Steel Co., Philadelphia, Pa.

Basic Open Hearth Practice, J. W. Porter, American Steel Foundries, East Chicago Ind.

Acid Open Hearth Practice, W. C. Harris, Birdsboro Steel Foundry and Machine Co., Birdsboro, Pa.

Modern Converter Practice, Fred B. Skeates, Link-Belt Co., Chicago, Ill.

Induction Furnace Practice, G. F. Landgraf, Lebanon Steel Foundry, Lebanon, Pa. In addition to the melting symposium there will be two steel sessions and a round table meeting for the steel division.

Pattern Making

An attraction for the pattern makers will be the talk by J. A. Kolb, Caterpillar Tractor Co., Peoria, Ill. He will present a discussion and demonstration which received the highest praise when it was given before the recent Iowa Foundry Conference and on the lecture course of the Chicago Chapter. The demonstration is unusually novel and explains some important pattern making problems.

World Foundry Congress

London—June 12 to 30, 1939

THE Institute of British Foundrymen, host to the 1939 World Foundry Congress, is completing plans for an exceptionally interesting technical program and a post convention tour which will delight all who attend. The sessions of the Congress will be held in London, June 12 to 17, with headquarters at the Dorchester Hotel, situated in Park Lane, the heart of the West End, and facing the famous Hyde Park. From here will be controlled the technical sessions, a comprehensive program of works visits, and, on the social side, the receptions and the banquet. During this week

certain times have been left free for sightseeing and visiting.

A post-congress tour, divided into two parts, has been arranged, that visitors may have a chance to visit some of the interesting historical spots and cities, with works visits in some of the outstanding industrial centers. The general tour is indicated on the picture map shown on this page. The first section lasts from June 18, leaving London on that date, to June 24, terminating at Manchester, returning by rail to London. The second section of the tour comprises visits to the famous English Lake District, then on to Glasgow, Edinburgh,



The Congress begins in London on June 12th to June 17th. The first part of the Post-Congress Tour starts with the departure from London on Sunday, June 18th, visiting the Shakespeare country and the Midlands, and finishing at Manchester on Saturday, June 24th. The map shown here, while not drawn to scale, will indicate the relative positions of the various places to be visited during the Congress and Post-Congress Tour.



Points of Interest on World Congress Tour—(Above) Derwentwater, English Lake District; (Center) St. George's Chapel, Windsor Castle; (Lower) Loch Achray in Trossacks on Road from Glasgow to Edinburgh.

Newcastle and return to London on June 30. A circular giving full details of the Congress and the tour is being mailed to all members. Those wishing to go with an American party are requested to get in touch with the A.F.A. Chairman of the International Relations Committee, Frank G. Steinebach, Editor, THE FOUNDRY, Cleveland.

A.F.A. Exchange Paper

One of the outstanding papers presented before the Congress will be the A.F.A. exchange paper by Frederick A. Melmoth, vice president and works manager, Detroit Steel Castings Co. Mr. Melmoth's paper will be on "The Renaissance of the Steel Casting and the Role of the Metallurgist."

Eastern Regional Foundry Conference To be Held at New Brunswick, N. J.

AN event of outstanding interest to all foundrymen of New York, New Jersey and Eastern Pennsylvania will be the first regional foundry conference at Rutgers University, New Brunswick, N. J. on April 1. This event is being sponsored jointly by the Metropolitan Philadelphia and the Metropolitan New York-New Jersey Chapters of A.F.A. and the Department of Mechanical Engineering of Rutgers University.

The conference will be the first ever held by a chapter of the American Foundrymen's Association in the area east of Ithaca and north of Birmingham and marks the first participation of the Metropolitan New York-New Jersey and the Philadelphia chapters in a regional meeting. According to present indications between 250 and 300 foundrymen will attend the conference.

The conference committee has arranged an excellent program of events and talks by some of the best authorities in the casting and metallurgical fields. The conference will be opened on Saturday morning at 9 a. m. with a registration period. Then, following a welcoming address by P. H. Daggett, Dean of Engineering at the University, the technical sessions will be held in the following order:

Morning Session—10:00 a.m.

Chairman: John Howe Hall, consulting engineer, Philadelphia.

"Castings from the Consumer's Viewpoint," by Norman L. Mochel, Westinghouse Electric & Mfg. Co., Philadelphia.

"Castings from the Producer's Viewpoint," by J. C. Pendleton, Newport News Shipbuilding & Dry Dock Co., Newport News, Va.



N. L. Mochel



J. C. Pendleton



H. H. Judson



W. G. Reichert

Conference Speakers

Afternoon Session—2:00 p.m.

Chairman: Sam Tour, Lucius Pitkin, Inc., consulting engineers, New York.

"Casting Defects as Affected by Sands," by W. G. Reichert, Singer Mfg. Co., Elizabeth, N. J.

"Casting Defects as Affected by Gates and Risers," by H. H. Judson, Goulds Pumps, Inc., Seneca Falls, N. Y.



H. L. Henszey
Chairman
Metropolitan
Philadelphia
Chapter



D. J. Reese
Chairman Metro-
politan New York-
New Jersey Chap-
ter

An informal buffet luncheon has been arranged for noontime to afford an opportunity for "shop talk" among the attending foundrymen, while a dinner at the Roger Smith Hotel, New Brunswick, in the evening will climax the meeting. The chairman of the dinner meeting will be Marshall Post, national president of the American Foundrymen's Association, and vice president of Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.

The guest speaker for this dinner will be Edwin C. Barringer, executive secretary of the Institute of Scrap Iron and Steel. In his address he will cover the contemporary problems faced by the foundry industry. Mr. Barringer's long experience in the metal working field, as Secretary of the Institute of Scrap Iron and Steel and previously as Editor of Daily Metal Trade, has placed him in a position to thoroughly appreciate the problems of the foundrymen as connected with the purchase of scrap iron and steel. The conference committee is indeed fortunate to get a man of Mr. Barringer's experience to address their meeting.

The personnel of the conference committee shown below consists of representation from the two chapters and the University. This committee is as follows:

Philadelphia Chapter Representatives
W. B. Coleman, W. B. Coleman & Co., Philadelphia.

AMERICAN FOUNDRYMAN



Old
Queen's
Building



Rutgers
Campus

H. L. Henszey, The Carborundum Co., Philadelphia.

W. C. Hartmann, Bethlehem Steel Corp., Bethlehem, Pa.

John Howe Hall, consulting metallurgist, Philadelphia.

New York-New Jersey Representatives

T. D. Parker, Climax Molybdenum Co., New York.

Sam Tour, Lucius Pitkin, Inc., New York

F. G. Sefing, International Nickel Co., Bayonne, N. J.

W. A. Phair, The Iron Age, New York.

Rutgers University Representatives

Prof. W. C. Schulte, Department of Mechanical Engineering.

The locale of the conference, New Brunswick, N. J., is steeped in historical traditions which trace back to the Revolutionary War period. The university, which was founded in 1766 as Queen's College, lists many prominent members of the industrial world among her alumni, such as G. H. Blakeley, president of McClintic-Marshall Corp., subsidiary of Bethlehem Steel Corp.; L. F. Loree, former president of the Delaware & Hudson Railroad; Eugene Yates, vice president of Commonwealth &

Southern Corp.; A. E. Owens, chief engineer of the Central Railroad of New Jersey, and J. F. Tinsley, president of Crompton & Knowles Loom Works of Worcester, Mass. The spacious, two-story gymnasium where the technical sessions will be held is on the site of the first intercollegiate football game in history which was played on Nov. 6, 1869 between Rutgers and Princeton University.



J. H. Hall



F. G. Sefing



W. B. Coleman



Sam Tour

Chairmen of Conference Sessions and Members of Conference Committee

castability and secondly, those discussing internal influences. Speakers and subjects scheduled are:

Methods of Controlling Directional Solidification, F. A. Melmoth, Detroit Steel Casting Co.

Relation of Sand Characteristics to Shrinkage and Cooling Rates of Castings, H. L. Womochel and C. C. Siegerfoos, Michigan State College.

Review of Sand Characteristics on Alloying Additions and Melting Practices on Castability of Aluminum Alloys, W. E. Sicka, Aluminum Co. of America.

Chill, Strength and Shrinkage Characteristics, H. W. Dietert, H. W. Dietert Co.

Review of Factors Affecting Fluidity, W. H. Spencer, Sealed Power Corp.

Effects of Raw Materials Characteristics on Castability, John Lowe, Lansing, Mich.

Symposium on Effects of Alloying Elements

Low, Medium and High Concentration Effects, E. K. Smith, Electro Metallurgical Co.

Castability of Alloy Steel Castings, R. J. Wilcox, Michigan Steel Casting Co.

Ladle Treatments by Graphitizers and Deoxidizers, R. G. McElwee, Vanadium Corp.

Demonstration on crystallization and polarized light will be staged by members of the College staff and a special meeting for the students will be held at which talks will be given on "Metal Castings in Industry."

Detroit Chapter Sponsors Seventh Regional Conference in April

THE Detroit Chapter joins with the Engineering Department of Michigan State College in holding the Seventh Annual Regional Foundry Conference at East Lansing, Mich. The dates selected are April 14 and 15. This conference, the oldest in point of history of the regional conferences, has come to be looked upon as the high point of the year for the foundries of the Detroit area and this year's program is expected to prove especially interesting and instructive. The theme of the talks and discussions will be "Castability."

The committee in charge of the meeting this year is under the chairmanship of V. A.

Crosby, Climax Molybdenum Co., Detroit. Serving with him are Ira F. Cheney, Griffin Wheel Co.; Harry J. Deutsch, Aluminum Co. of America; H. W. Dietert, Harry W. Dietert Co.; Fred J. Walls, International Nickel Co.; F. A. Melmoth, Detroit Steel Casting Co., all of Detroit, and Prof. Wayne L. Cockrell of the Dept. of Metallurgy, Michigan State College. The meeting will open on the morning of the 14th, with registration in the Engineering Building on the University campus.

The sessions will be divided into two classes, first, those discussing external influences in



At Wisconsin Conference—M. J. Gregory (left), Caterpillar Tractor Co., and Chairman, Quad City Chapter, and B. D. Claffey, General Malleable Corp., Secretary Wisconsin Chapter, Discuss Casting Problem.

To Members of Non-Ferrous Division, A. F. A.

Montreal, Canada,
March 1, 1939

YOUR CHAIRMAN has felt for some years that there must be among the younger active members of the Non-Ferrous Division of the American Foundrymen's Association many bright minds that have not been given the opportunity to prove their worth.

The life of any institution depends on proper provision for the future and as the years go on, it will become imperative that trained men are ready to take the positions that will gradually be vacated. Further, it is desirable that we should take advantage of the latest viewpoints which must of necessity be more familiar to the younger members than to those of us who are older.

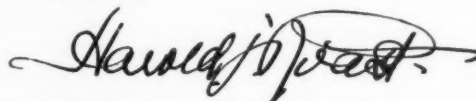
I realize that some people may think that there is a risk in making a change of leadership and personnel in the various committees, when we have been so well served by the present incumbents in the past. We believe, however, that for the reasons stated, even with some risk, we must attract the younger men for these positions of service to the craft.

It is with this end in view that the new regulations, appearing in this issue of American Foundryman, have been drawn up and I should be glad to receive names of volunteers along such lines as the giving of papers or the joining of any one of the Non-Ferrous committees, as listed.

Although the Division Advisory Committee will be looking for men to take on the work of the various committees, both as committee members and chairmen, they would, I know, be glad indeed to have any member volunteer for work for which he feels himself qualified.

May I take this opportunity of confirming my request for your continued support in the work of the Division as only by the concerted effort of all can the work progress in the right way.

Yours truly,



HAROLD J. ROAST, Chairman
A.F.A. Non-Ferrous Division.

Regulations Governing Non-Ferrous Division

(Revised and approved, 1938)

Principle:

The principle governing the appointment of all officers and members of committees shall be to provide a maximum circulation of such positions, thus increasing the interest of each individual member to the mutual advantage of both the member and the Division.

Article I. Officers and Government.

Section 1. The officers of the Division shall consist of a Chairman, a Vice-Chairman, and a Secretary. The Chairman of the Division shall be ex officio a member of all Committees. The Secretary shall be the Technical Secretary of the American Foundrymen's Association, or such other member of the Secretariat whom he may delegate. These officers shall hold the same offices in the Advisory Committee referred to in Section 4.

Section 2. The direction of the affairs of the Division shall rest in an Advisory Committee, insofar as is consistent with the rules and regulations of the Division and the Constitution and By-laws of the American Foundrymen's Association.

Section 3. The Division shall report to the Board of Directors through the Divisional Activities Correlation Committee, or through the Technical Secretary of the Association, as required under the General Technical Committee organization plan of the organization.

Section 4. The Advisory Committee shall consist of: The Chairman of the Division, the Vice-Chairman of the Division, the immediate past-chairman, the Secretary of the Division, the Chairmen of all standing committees and six additional members who shall be elected from within the membership of the Division.

Section 5. The Chairman and Vice-Chairman of the Advisory Committee shall both serve for a two-year period, or until their successors are elected. Each elective member of the Advisory Committee shall serve for four years, or until their successors are elected. No officers except the Secretary shall serve consecutively in the same office for more than two years.

Section 6. The Advisory Committee shall meet at times and places as may be determined by it or designated by its Chairman. There shall be at least ten days notice by mail to each member of the Committee.

QUORUM: Five members present shall constitute a quorum.

Section 7. A tentative program of each meeting of the Advisory Committee shall be made by the Secretary with the advice of the Chairman and mailed to each member at least three days before the meeting.

Section 8. The Advisory Committee may, by a two-thirds vote of its membership, declare the position held by any member of the Committee vacant for failure of its incumbent to attend meetings for one year, or to perform the duties of his office, and shall thereupon elect another member of the Division to fill this vacancy.

Section 9. Should a vacancy occur for any reason in the position of any member of the Committee, the remaining members of the Committee shall elect a qualified member of the Division to fill the vacancy for the unexpired term.

Section 10. Within ten days after each meeting, the Secretary shall send minutes of the meeting to all members of the Committee. A majority vote of those present at a meeting, provided the quorum is present, shall constitute approval of any action taken, except in cases where the matter deals with the filling of a vacancy under Section 8, in which case affirmative votes of seven members shall be required.

Article II. Meeting of the Division.

Section 1. The Division shall meet at the same time and place as the annual meeting of the American Foundrymen's Association, and at such other times and places as may be determined by the Advisory Committee.

Section 2. The meeting for the election of officers and elective members of the Advisory Committee shall be held at the same time as the regular annual meeting of the American Foundrymen's Association, in the even numbered years.

Section 3. For the transaction of business at a meeting of the Division, the presence of a quorum of not less than twenty-five members of the Division shall be necessary.

Article III. Committees.

Section 1. The Nominating Committee shall be as described in Article IV.

Section 2. The Advisory Committee shall be as described in Article I.

Section 3. Subject to the approval of the Advisory Committee, the Chairman of the Division may appoint additional committees and designate their chairmen.

Section 4. Any committee chairman may invite any person especially qualified to assist the committee in its work. Such a person shall not have a vote. His assistance may be given recognition in the minutes or reports of such committee.

Section 5. There shall be Standing Committees of the Division as follows: 1. Program and Papers Committee. 2. Recommended Practices Committee. 3. Round Table Conference Committee.

Section 6. Each member of a Standing Committee shall be appointed to serve four years, and the arrangement shall be such that approximately one-fourth of the committee membership shall be appointed each year. When a new committee is being appointed, the members shall be appointed for terms of one, two, three and four years, respectively. These appointments shall be made by the Chairman of the Division, subject to the approval of the Advisory Committee.

Each Standing Committee shall consist of either four, eight or twelve members of the Division, of which one-fourth shall be appointed each year for terms of four years, or until their successors are appointed.

During the *odd numbered years*, the Chairman of the Division shall designate a Chairman for each Standing Committee from within its membership to serve for two years. It is recommended that chairmen of Standing Committees shall not be re-appointed until two years have passed, after the expiration of their term.

Chairmen of the Standing Committees, subject to the approval of their respective committees, may appoint such sub-committees as seem desirable in the conduct of their work. Members of such sub-committees need not be members of the Standing Committees, but shall be members of the Division.

Duties of the Standing Committees

For the Non-Ferrous Division these are at present as follows:

Section 7-A. The Program and Papers Committee of the Division shall, through and in cooperation with the Technical Secretary and the Program and Papers Policy Committee of the Association, solicit and procure the necessary papers for presentation at the various meetings. The suitability of the papers shall be determined by their submission to three members of the Division qualified to pass on them.

Section 7-B. The Committee on Recommended Practices shall arrange for the collection of the necessary information and preparation of recommended practices of Non-Ferrous Metals for publication in book form or otherwise, and shall submit the same to the Advisory Committee of the Division.

Section 7-C. The Committee on Round Table Conferences shall plan, arrange for and conduct the round table conferences in connection with the annual meetings of the American Foundrymen's Association.

All Committees shall report in writing to the Advisory Committee prior to the annual meeting of the Division, and it shall be the duty of the Secretary to see that this is done. All Committee actions shall be subject to the approval of the Advisory Committee.

Section 8. Subject to the approval of the Advisory Committee, the Chairman of the Division may recommend to the President of the American Foundrymen's Association the appointment from within the membership of the Division representatives to various Committees of other Divisions of the American Foundrymen's Association, and to various other Technical Societies and Institutions.

When feasible, the representatives so appointed shall be members of the Advisory Committee, but if they are not, they should be invited to present their reports in person at the meetings of the Advisory Committee.

Article IV. Nominations and Elections.

Section 1. Every second year, in the *even numbered years*, the Division shall elect a Chairman, a Vice-Chairman, and three members of the Advisory Committee.

Section 2. A Nominating Committee, consisting of five members of the Division, shall be appointed by the Chairman by and with the approval of the Executive Advisory Committee immediately after the annual meeting in the *odd numbered years*.

Section 3. No member shall serve on the Nominating Committee for two consecutive terms.

Section 4. This Committee shall make its report to the Advisory Committee within six months after the annual meeting during the *odd numbered years*. The report of the Nominating Committee shall be published in the monthly publication of the Association not less than four months before the annual meeting. The Nominating Committee shall nominate one member for Chairman, one for Vice-Chairman, and three members for the Advisory Committee from within the members of the Division.

Section 5. Any twenty-five members of the Division may submit nominations for one or more offices to the Advisory Committee not later than the date three months before the annual meeting during the *even numbered years*, and the person so nominated shall be included in the list of nominees.

Section 6. All nominees shall have signified their willingness to act.

Section 7. The election shall be at the annual meeting of the Division. In case no other nominees are made other than those by the Nominating Committee, the Secretary shall be instructed to cast a unanimous ballot for those nominated. If additional nominations have been made, as provided for in Section 5 of this Article, elections shall be by a show of hands of the members of the Division, a quorum being present. If deemed necessary by the Chairman, a closed ballot may be taken. If a quorum is not present, votes shall be by letter ballot as soon after the meeting as possible.

Section 8. The Chairman of the Division and Standing Committees shall remain in office till the close of their respective meeting at the last American Foundrymen's Association convention corresponding to their terms of office.

Article V. Amendments.

Section 1. Proposals to amend these regulations shall be made in writing to the Advisory Committee and signed by at least ten members. They shall be considered by the Advisory Committee and, if approved, shall then be submitted to the Divisional Activities Correlation Committee for approval and submission to the Board of Directors of the Association. If the approval of the Board of Directors is given, the amendments shall be announced to the members through the columns of the monthly publication of the American Foundrymen's Association. They shall be voted upon at the annual meeting of the Division following, not earlier than one month from time of publication or by letter ballot as may be directed by the Advisory Committee.

Non-Ferrous Division Committees[†]

Harold J. Roast, General Chairman
Wm. J. Laird, Vice-Chairman

53a. Advisory Committee.

Harold J. Roast,* Chairman, 1938-40
Wm. J. Laird,* Vice-Chairman, 1938-40
H. M. St. John,* Past-Chairman
N. F. Hindle, Secretary
J. J. Curran,* 1936-40
D. M. Curry,* 1936-40
John H. Diedrich,* 1936-40
C. V. Nass,* 1938-42
R. W. Parsons,* 1938-42
T. C. Watts,* 1938-42

Wm. H. Romanoff (Chairman Program and Papers Committee)

H. J. Rowe (Chairman Recommended Practices Committee)

J. W. Kelin (Chairman Round Table Conference Committee)

Jerome Strauss (Chairman Research Committee)

53b. Program and Papers Committee.

Wm. H. Romanoff, Chairman, 1937-41
T. E. Kihlgren, 1935-39
W. Bousark, 1938-39
F. S. Wellman, 1936-40

R. W. Parsons, 1936-40
T. C. Watts, 1937-41
J. E. McNulty, 1938-42
M. V. Healey, 1938-42

53c. Committee on Recommended Practices.

H. J. Rowe, Chairman, 1938-41
E. F. Hess, Vice-Chairman, 1938-42
W. M. Ball, Jr., 1935-39
M. V. Brooks, 1935-39
C. V. Nass, 1935-39
J. W. Bolton, 1936-40
E. M. Wise, 1938-40
G. P. Halliwell, 1938-40

[†]The Non-Ferrous Division in the General A.F.A. Committee listing has the number 53. The dates following the names are the terms of election or appointment.

*Elected

Non-Ferrous Division Committee
(Continued).

J. D. Burlie, 1937-41
A. E. Cartwright, 1938-41
J. H. Koffman, 1938-42
G. K. Eggleston, 1938-42

Sub-Committee on Red Brass
G. K. Eggleston, Chairman
J. D. Burlie

Sub-Committee on Tin Bronze
E. F. Hess, Chairman
J. W. Bolton

53d. Round Table Conference Committee.

J. W. Kelin, Chairman, 1938-40
T. C. Watts, 1935-39
C. V. Nass, 1939-41
C. O. Thieme, 1938-42

53e. Committee on Research.

Jerome Strauss, Chairman, 1938-40
G. K. Eggleston, 1938-39
H. L. Smith, 1938-41
Harold B. Gardner, 1938-42

53f. Nominating Committee.

To be appointed 1939. (To nominate a Chairman, Vice-Chairman and 3 members of Advisory Committee to be elected in 1940.)

53g. Committee on Hand Book Revision.

H. M. St. John, Chairman
J. W. Bolton
D. M. Curry
R. W. Dayton

53h. Representatives on other Association Committees.

A.S.T.M. B-5 on Copper Base Alloys—
F. L. Wolf
A.S.T.M. Committee B-2, Sub-Committee
1, on Pure Metals in Ingot Form—
G. H. Clamer
A.S.T.M. Committee B-7 on Light Metals
and Alloys—Manley E. Brooks
U. S. Bureau of Standards, Advisory Non-
Ferrous Metals Committee—Sam Tour
A.F.A. Hand Book Policy Committee—
H. M. St. John
A.F.A. Cost Committee—E. J. Metzger
A.F.A. Committee on Moulding Sand Re-
search—C. M. Saeger, Jr.

53i. Committee on Recommended Procedure for Analysis of Defects.

H. M. St. John, Chairman
Harold J. Roast
L. H. Fawcett
Wm. H. Romanoff

fractories, may be obtained through the Superintendent of Documents, Government Printing Office, Washington, D. C. Price 10 cents a copy.

Malleable Furnace Refractories

The Joint Committee has also recommended standard shapes and sizes for malleable furnace refractories, which have been issued by the Division of Simplified Practice as Simplified Practice Recommendation R79, Malleable Foundry Refractories. These cover 9-inch series, 12½-inch series, miscellaneous shapes, door opening tile and tap-out blocks. Copies of these may be obtained either through the Government Printing Office or through the A.F.A.

The Joint Committee on Refractories through its A.F.A. representative reported on these new standards at the 1938 A.F.A. Convention. It is also cooperating through the A.F.A. Committee to discuss these recommendations, as they are promulgated, before the A.F.A. Convention sessions on refractories.

Standard Shapes and Sizes of Refractories

Cupola Refractories

THE Division of Simplified Practice, National Bureau of Standards, has recently issued Simplified Practice Recommendation R154-38 "Cupola Refractories." This publication supersedes R154-34, first issued in 1934, and contains diagrams and tables giving shapes and sizes for: Two-hole tap-out blocks; 6-inch cupola blocks; 9-inch cupola blocks; 4½-inch "Colliau" blocks, 9 inches high; 4½-inch blocks, 4 inches high; one-hole tap-out blocks; slag-hole blocks.

The development of these recommended standards was initiated by the Joint Committee on Foundry Refractories, sponsored by the American Foundrymen's Association and the American Ceramic Society. A.F.A. representatives on the Joint Committee are Jas. R. Allan, International Harvester Co., Chicago; E. J. Carmody, C. C. Kavin Co., Chicago; J. A. Kayser, Laclede Christy Clay Products Co., St. Louis, and R. E. Kennedy, Secretary, A.F.A. The Division of Simplified Practice has submitted these recommendations to the foundry industry and they have been approved by the A.F.A., American Ceramic Society, American Refractories In-

stitute, National Founders' Association, The Joint Committee on Refractories, and by a large number of foundries.

Copies of R154-38, Cupola Re-

International Dictionary of Foundry Terms

A BOOK of special importance to readers of foreign language articles on foundry practice is that just completed, entitled "Dictionnaire International De Fonderie," or International Foundry Dictionary. This publication has been developed through the cooperative efforts of the several foundry associations of the International Committee of Foundry Technical Associations of which the A.F.A. is a member.

The principal effort in the collection of the material has been made by the French Foundry Technical Association, which, seeing the need for such a publication, because of the large number of exchange papers being presented annually, advocated this book. Each association was requested to contribute their definitions of a list of foundry terms.

The book as published has sec-

tions giving the term in French, with an explanation of their meanings. These words are code numbered, and the corresponding terms with the same number are given in other sections in German, English, Spanish, Italian, Polish, Portuguese and Czechoslovakian languages.

The A.F.A. Committee cooperating in this work was under the chairmanship of Pat Dwyer, engineering editor, The Foundry, Cleveland, O. He was assisted by John Grennan, foundry instructor, University of Michigan, and C. C. Brisbois, foundry superintendent, The Robert Mitchell Co., Ltd., Montreal, Canada.

The Association will be pleased to order copies of this dictionary for members. The cost of each copy will be about \$2.00, plus any customs duties. It is cloth bound, 334 pp. 3½ x 5½ page size.

AMERICAN FOUNDRYMAN

New Members



Converted From Limited Firm to Company Membership
 Clark Equipment Company, Buchanan, Mich.
 Crucible Steel Castings Co., Lansdowne, Pa.
 Keokuk Electro Metals Co., Keokuk, Iowa.
 Olney Foundry Div.-Link Belt Co., Philadelphia, Pa.
 Republic Coal & Coke Co., Chicago, Ill.

Company Members

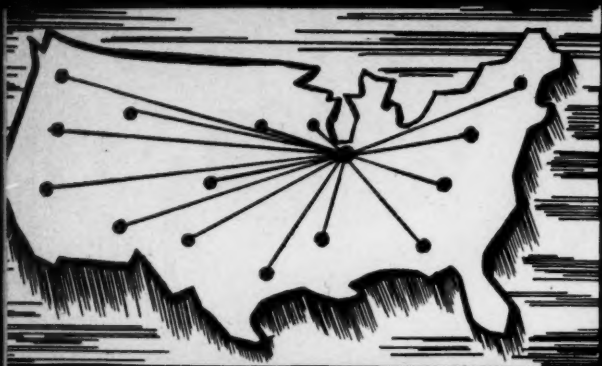
The American Steel & Wire Co. of N. J., Rockefeller Bldg., Cleveland, O.
 Berg Metals Corp., 2640 Long Beach Ave., Los Angeles, Calif. (Mark Berg, Mgr.)
 Elkhart Foundry & Machine Co., Elkhart, Ind. (R. E. Patterson, Secy. & Treas.)
 Chris. Erhart Foundry & Machine Co., Cincinnati, Ohio, (Chas. C. Erhart, Pres.)
 Finkelstein Foundry Supply Co., Los Angeles, Calif. (Lester M. Finkelstein, V. P.)
 The Macleod Company, Cincinnati, Ohio.
 United Brass & Aluminum Mfg. Co., Port Huron, Mich. (E. Faulkner, Iron Fdry. Supt.)

Personal Members

Geo. Anderson, Core Room Foreman, United Brass & Aluminum Mfg. Co., Port Huron, Mich.
 Charles Appel, Pattern Shop Foreman, The Lunkenheimer Co., Cincinnati, Ohio.
 S. G. Artingstall, Jr., Dist. Mgr., C. O. Bartlett & Snow Co., Cleveland, Ohio.
 Wilber C. Barnhart, Supt. W. J. Bullock & Co., Birmingham, Ala.
 R. R. Baxter, Gen. Supt. Caldwell Fdy. & Mach. Co., Birmingham, Ala.
 Roy E. Bernius, Research Engineer, Michiana Products Corp., Michigan City, Ind.
 Oscar E. Bredenberg, Mgr., Sheridan Iron Works, Champlain, N. Y.
 V. C. Bruce, Salesman, Buckeye Products Co., Cincinnati, Ohio.
 Eugene L. Bunting, Fdry. Supt., The Lunkenheimer Co., Cincinnati, Ohio.
 Louis V. Burns, Fdry. Foreman, J. B. Wise, Inc., Watertown, N. Y.
 Earl Byers, Core Room Foreman, Sibley Mach. & Fdry. Corp., South Bend, Ind.
 W. F. Byrd, Supt., Ala Pipe Co., Gadsden, Ala.
 Stanley T. Dolan, E. F. Houghton & Co., Philadelphia, Pa.
 Herman K. Ewig, Fdry. Supt., Cincinnati Milling Mach. Co., Cincinnati, Ohio.

O. Fredrickson, Molding Foreman, Sibley Mach & Fdry. Corp., South Bend, Ind.
 M. L. J. Fritz, Molding Foreman, Sibley Mach. & Fdry. Corp., South Bend, Ind.
 Henry Gehrke, Supt., Michiana Products Corp., Michigan City, Ind.
 Leo Goldman, Metallurgist, United Brass & Aluminum Mfg. Co., Port Huron, Mich.
 Raymond D. Gregory, Labor Foreman, Clark Equipment Co., Buchanan, Mich.
 I. B. Helburn, Dist. Mgr., American Air Filter Co., Louisville, Ky.
 Herman Hess, Fdry. Supt., Clark Equipment Co., Buchanan, Mich.
 Curtis H. Lewis, Foundry Foreman, Lunkenheimer Co., Cincinnati, Ohio.
 T. H. Lorenz, Gen. Supt., Sibley Machine & Fdry. Corp., South Bend, Ind.
 William J. Love, Jr., Asst. Fdry. Foreman, The Lunkenheimer Co., Cincinnati, Ohio.
 Joel C. Manning, Moulding Foreman, Clark Equipment Co., Buchanan, Mich.
 H. F. McFarlin, Iron & Steel Fdry. Foreman, The Lunkenheimer Co., Cincinnati, Ohio.
 Martin F. Milligan, Metallurgist, The Lunkenheimer Co., Cincinnati, Ohio.
 W. O. Murray, Chief Chemist, Keokuk Electro-Metals Co., Keokuk, Iowa.
 L. E. Othmer, Gen. Supt., Keokuk Electro-Metals Co., Keokuk, Iowa.
 H. J. Pingle, Production Supt., Sibley Mach. & Fdry. Corp., South Bend, Ind.
 Elmer Radabaugh, Asst. Foreman, The Lunkenheimer Co., Cincinnati, Ohio.
 Harry H. Reich, Southern Rep., Tabor Mfg. Co., Philadelphia, Pa.
 Frank R. Robinson, Salesman, Jefferson Brick Supply Co., Birmingham, Ala.
 J. L. Robison, Supt., Alabama Pipe Co., Gadsden, Ala.
 Wm. F. Seilkop, Maintenance Foreman, Cincinnati Milling Mach. Co. Fdry. Div., Cincinnati, Ohio.
 Harry R. Shick, Salesman, Hickman Williams & Co., Chicago, Ill.
 L. C. Snyder, Salesman, Hickman Williams & Co., Cincinnati, Ohio.
 Rollin J. Stickle, Willoughby, Ohio.
 Geo. F. Vann, Supt., Pipe Fdry. American Cast Iron Pipe Co., Birmingham, Ala.

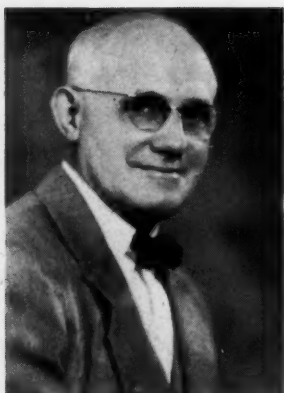
(Continued on Page 14)



Chapter Activities

Come, Let's Get Together

By J. G. Coffman, Chairman, Southern California Chapter



Mr. Coffman, who is vice-president and plant manager of the Los Angeles Steel Casting Co., Ltd., presented these remarks before a gathering of his Chapter. As his remarks so well express the real purpose of Association and Chapter membership, they are reproduced here.

THE old adage, "United we stand, divided we fall," is applicable today in industry perhaps more than ever. We, who are engaged in the highly specialized and technical production of metal castings, a fundamental and basic industry, are no exceptions to the laws of cooperation and association.

Out of this need to come together for the purpose of solving our mutual problems, the A.F.A. was born. Mankind engages in no activities for which he does not feel a need; he continues in no undertakings in which he cannot find profit of some sort, financial, or personal.

The continued growth and importance of the Southern California Chapter of the A.F.A. since its founding, some few years ago in this great industrial empire, is proof that our organization has filled a need. Its efficiency, its ability to function for the benefit of the foundry industry and the

individuals interested in all branches of the foundry trade, is limited largely by the support given the organization and its undertakings, by the industry itself.

Are you, as an individual, doing your share in making this organization the success we all wish it to be? Our chapter membership has grown to over one hundred members. This is excellent, but there is still room for growth. Do you, as a foundryman, support this organization? Are you doing your share to help our present membership coordinate its activities for the greatest good to the entire industry?

Objectives

We have a definite object which may be briefly stated, "To promote the arts and sciences applicable to metal casting manufacture, to improve the methods of production and quality of castings, to the end that increasing utility of castings may result advantageously to all persons engaged in the foundry and related industries and the users of castings."

Secondly, since "All work and no play makes Jack a dull boy," we have as an object, to "Establish more intimate social relations between those engaged in the casting and allied industries in Southern California."

Some Chapter Activities

The most harmonious of industrial relations exist where the most harmonious social relationships are to be found. To this end the Chapter has now, for the second consecutive year, arranged a banquet and Christmas celebration for the members



Southern
California
Chapter
at
Christmas
Party

of the industry and their associates. Once a month, throughout the year, we have held and will continue to hold at least one meeting in which our mutual problems and undertakings can be discussed and in part solved.

The Southern California Chapter of the A.F.A. has carried on its share of the meetings which are held by various chapters throughout the country. Here we have listened to papers read by men eminent in the technical branches of our profession. Engineers and technicians have given their time and effort in discussing our problems at these meetings. Those of us who have not availed ourselves of the opportunity of attending these meetings, are missing many things of value.

Sponsored by our organization and arranged by the officials, we have been instrumental in securing classes in foundry theory and practice for apprentices. Twenty-seven men, employed in local foundries, are at present attending a course, one evening a week, in iron casting theory and practice at the Manual Arts High School, Los Angeles. These men have been working from one to three years in the business and upon completing a ten weeks' course, will take a course in pattern making. At an early date we will set up a similar course in either non-ferrous or in steel casting.

The Association's Part

What do we as an Association do for our individual members, you may ask? Assemble and

spread knowledge and information on materials and processes. Cooperate in the preparation and advancement of specifications and standards of materials and products. And not least, we strive to make our industry articulate in matters of public policy affecting our industry. And what industry today is not affected directly or indirectly by matters of public policy?

For our customers—for the users of castings, we, as an Association, have both a privilege and a duty. It is our privilege to promote the use of castings where they can be used with efficiency and are not now being used. It is our duty to engage in such research and group activity as may enable the buyer and user of castings to do so with increasing satisfaction and happy results in his cost accounting.

In Retrospect—The Future

The American Foundrymen's Association — Southern California Chapter, looks back over the past year with pride in its accomplishments, and gazes forward into 1939, determined to increase its activities to the end that the foundrymen of this region may be served. The officers of this organization extend their greetings to our members, and issue the most cordial invitation to you of the industry, who have not as yet associated yourselves with us, to make this joining the fore-front of your New Year's resolutions.

March Chapter Meetings

March 6
Buffalo
Gerry's Restaurant
C. W. BRIGGS—"Solidification Shrinkage and Contraction of Metals"

Metropolitan New York-New Jersey
Essex House, Newark, N. J.
H. F. SCATCHARD—"Cement Moldino"

March 9
St. Louis
York Hotel

March 10
Metropolitan Philadelphia
Engineers' Club, Philadelphia
A. M. ONDREYCO—"Modern Developments in Cast Iron"

Northern California
Athens Club, Oakland
Non-Ferrous Castings

Central New York
Hotel Onondago, Syracuse
J. L. LUDWIG, Jr.—"Briquets in the Cupola"

March 13
Chicago
Medinah Club
Equipment Developments

March 14
Northeastern Ohio Chapter
Guild Hall, Builders Exchange Bldg., Cleveland

Northern Illinois-Southern Wisconsin
Rockford, Ill.
HORACE DEANE—"Modern Sand Problems"

Cincinnati
S. C. MASSARI—"Automatic Cupola Control by Controlled Combustion"

March 15
Michiana
Hotel Oliver, South Bend
DONALD J. REESE—"Cupola Operation"

March 16
Detroit
Fort Shelby Hotel
DONALD J. REESE—"Cupola Charging and Control Methods"

March 17
Birmingham
H. J. NOBLE—"History of Iron and Steel"

Ontario
Hamilton, Ont.
F. J. WALLS—"Modern Developments in Cast Iron"

Wisconsin
Hotel Schroeder, Milwaukee
BENJ. SCHWARTZ—"The Scrap Situation"

March 20
Quad City
Blackhawk Hotel, Davenport, Iowa

March 23
Southern California

April 1
Joint Conference
Metropolitan New York-New Jersey and
Metropolitan Philadelphia Chapters
Rutgers University, New Brunswick, N. J.

See program Page 6.

New Members

(Continued from Page 11)

Arthur Watkins, Vice Pres. & Sales Mgr., Alabama Clay Prod. Co., Birmingham, Ala.
Sylvester A. Weigand, Metallurgist, The Lunkenheimer Co., Cincinnati, Ohio.
Hardy G. Wells, Salesman, Miller & Company, Chicago, Ill.
Floyd Whitman, Molding Foreman, Gunite Foundries, Rockford, Ill.
John E. Whitney, Shipping Clerk, Fulton Fdry. & Mach Co., Inc., Cleveland, Ohio.
Wimberly & Thomas Hdwe. Co., Birmingham, Ala.

William C. Wine, Rates & Time Study, Sibley Mach. & Fdry. Corp., South Bend, Ind.

C. S. Winter, Duplex Mfg. & Fdry. Co., Elyria, Ohio.

Henry M. Wood, Cincinnati Rep., W. W. Sly Mfg. Co., Cleveland, Ohio.

Foreign Members

Francis W. Rowe, Mgr., David Brown & Sons (Hudd) Ltd., Penistone, Nr. Sheffield, Eng.

Hispano Suiza (Societe D'Exploitation Des Matériels, Rue Du Capitaine Guynemer, Bois-Colombes, Seine, France.)

"With Clockwork Precision"—Keynote of Annual Wis. Regional Foundry Conference

THE second annual Wisconsin regional foundry conference held at the Schroeder Hotel, Milwaukee, February 16-17, was exceptionally creditable to the leadership and organizing ability of those in charge of the conference committee, Charles I. Wesley, Wesley Steel Treating Co. and Prof. E. R. Shorey, University of Wisconsin, co-chairmen, and to the great amount of work done by their fellow committee members and chapter officers. Especially active in aiding Mr. Wesley from the chapter were chapter President Roy M. Jacobs, Standard Brass Works; chapter Vice President W. J. MacNeill, Federal Malleable Corp.; chapter Secretary B. D. Claffey, General Malleable Corp.; chapter Treasurer W. J. Donnelly, Smith Steel Foundry Co.;

Walter Gerlinger and other Board members.

Record Enrollment

With a smashing record-breaking enrollment of over 500, all the sessions and events were carried through with clock-like precision, controlled by illuminated clocks and signs giving starting and stopping times, which were observed by the chairman.

The conference, sponsored by the Wisconsin Chapter, together with the Department of Mining and Metallurgy, University of Wisconsin, had on its program 27 sessions, with 30 speakers and discussion leaders.

The conference was called to order by chapter President Roy M. Jacobs, with the opening address being given by F. Ellis Johnson, Dean, College of En-

gineering, University of Wisconsin. Following the opening meeting most of the time was devoted to simultaneous discussion sessions on iron, steel, malleable and non-ferrous practices.

Feature Addresses

Features of the conference were the addresses before the joint sessions and luncheon and dinner meetings. L. W. Rogers, special lecturer in salesmanship, College of the City of New York, was the speaker at the first luncheon, while Dr. L. E. Lawrence, University of Wisconsin, talked on the present international situation at the second luncheon. The guest speaker for the annual conference banquet was "Billy" Beard, Atlanta, Ga., nationally known humorist, philosopher and commentator.

The two speakers at the joint meeting on job evaluation were Charles W. Pendock, President, Le Roi Co., and E. L. Roth, President, Motor Castings Co., both of Milwaukee.

At the final joint technical session, M. J. Gregory, Factory Manager, Foundry Division, Caterpillar Tractor Co., Peoria, and Chairman, Quad City Chapter, A.F.A., gave an exceedingly interesting talk on foundry control methods, illustrated with castings and equipment that he had on display.

The last event of the conference was a general meeting with an address by Capt. R. Orsetti on "Modern European Aeronautics," an enjoyable climax to an outstanding conference.

AMERICAN FOUNDRYMAN

Wisconsin Conference Committee Members, Left to Right—Walter Gerlinger, Prof. E. R. Shorey, Co-Chairman; Roy Jacobs, Chapter Chairman; B. D. Claffey, Chapter Secretary; Charles I. Wesley, Chairman, Conference Committee. (Picture Furnished Through Courtesy of John Bing, A. P. Green Fire Brick Co.)



Cincinnati Chapter Organized

AT A DINNER meeting held February 14 at the Hotel Alms, Cincinnati, attended by some 125 members of A.F.A. and guests, the seventeenth chapter of the Association was organized.

The chapter will be known as the Cincinnati District Chapter, including in its territory Dayton, Ohio, and Richmond, Indiana, to the north; Wilmington and Hillsboro to the east; Aurora, Indiana, to the west, and Northern Kentucky.

Presiding at the organization meeting as temporary chairman, George A. Seyler, Works Manager, Lunkenheimer Company, and A.F.A. director, welcomed all new members and explained future plans for the chapter, and the requirements for affiliation with the Association as a chapter. E. T. Korten, Reliable Pattern and Casting Co., was requested to serve as acting secretary. Mr. Korten read the minutes of the preliminary meeting which had been held on January 30, authorizing the appointment of a nominating committee. The report of this nominating committee was read by its chairman, P. H. Cone, Assistant General Manager, Cincinnati Milling Machine Co., placing in nomination for directors the following:

W. M. Ball, Jr., General Supt., Edna Brass Manufacturing Co., Cincinnati.

Herman K. Ewig, Foundry Supt., Cincinnati Milling Machine Co., Cincinnati.

Robert Frankl, President, Superior Pattern Co., Cincinnati.

E. T. Korten, President, Reliable Pattern & Castings Co., Cincinnati.

E. F. Loges, Secretary-Treasurer, Kramer Bros. Foundry, Dayton.

H. J. McFarlin, Foundry Foreman, Lunkenheimer Co., Cincinnati.

Chester Peebles, Treasurer, Stedman's Foundry & Machine Works, Aurora, Ind.

R. J. Redmond, Secretary, Buckeye Foundry Co., Cincinnati.

Earl Thompson, Treasurer, H. B. Duecher Co., Hamilton.

Officers to serve to the end of the fiscal year, June 30, will be elected from the board.

Chairman Seyler then introduced H. W. Dietert, Harry W. Dietert Co., Detroit, who talked on the subject, "The Sand in Your Foundry." His talk, illustrated with slides, was followed by a lively discussion period of questions and answers. At a previous meeting held January 31 to formulate plans for the chapter, there was an attendance of 150,

The guest speaker was M. A. Scott, Greenlee Foundry Co., Chicago, who discussed methods of gating and risering, presenting his theories and practices in preventing shrinkage by controlling the heat of the sand between the casting and the riser through which the metal enters the mold.

The next meeting will be held at the Hotel Gibson, Tuesday evening, March 14. The speaker will be Mr. S. C. Massari, Research Metallurgist, Association of Manufacturers of Chilled Car Wheels, Chicago, who will talk on "Automatic Cupola Control by Controlled Combustion."

Detroit Studies Cracked Casting Problem

By H. J. Deutsch,* Detroit, Mich.

THE February meeting of the Detroit Chapter, held on the 16th, added one more to the increasingly successful affairs of this chapter in the automotive center. With over one hundred in attendance, in the absence of chapter chairman Ira F. Cheney, the meeting was called to order by vice chairman Harry W. Dietert.

As a first order of business, Mr. Dietert announced that the chapter by-laws had been amended to increase the number of directors from six to twelve and that a nominating committee was presenting certain names for the new directors. These were:

For Three-Year Term

V. A. Crosby, Climax Molybdenum Co.

Howard McCoy, Cadillac Motor Car Co.

For Two-Year Term

Fred J. Walls, International Nickel Co.

F. A. Melmoth, Detroit Steel Casting Co.

For One-Year Term

E. L. Morrison, Budd Wheel Co.

Otto E. Goudy, Kelsey-Hayes Wheel Co.

As there were no further nominations the secretary was in-

structed to cast a unanimous ballot in favor of those nominated.

Chairman Dietert then introduced L. A. Danse, chief metallurgist, Cadillac Motor Car Co., as the speaker of the evening. His subject was "Some Aspects of Cracked Castings" and the material he presented was from a paper he is preparing for the Annual Convention of A.F.A. He went into the history of the development of a method of eliminating cracks in their V-8 cylinder block. With the use of thermocouples placed at various points in the mold cavity they were able to determine that the cracks were caused by strain set up due to unequal heat balance.

The temperature gradient between the minimum and maximum location in the casting was as much as 800°F. They were able to overcome their difficulty with cracks by altering the gate and risers to provide better distribution of the metal in the mold and by altering sections of the casting in order to retard or accelerate cooling and by controlling the cooling rate of the casting after it is shaken out. Mr. Danse, with several lantern slides, showed the location of the thermocouples in various tests which were carried out and also illustrations of the gates and risers on the castings and the type of cracks which gave them the trouble.

*Aluminum Company of America and Secretary, Detroit Chapter.

President Post Meets Three Chapters

DURING the week end of February 9, President Marshall Post made his second trip to the Middle West to attend three chapter meetings. His previous trip to this section was made last November when he visited the Northeastern Ohio, Wisconsin and Quad City Chapters. On this latest trip he appeared before the St. Louis, Michiana and Chicago Chapters. In all cases he was accompanied by C. E. Hoyt, Executive Vice President, who with President Post attended Chapter Board of Director meetings, discussing chapter activities.

St. Louis

The St. Louis Chapter held their meeting the evening of February 9 with one of the largest number of members and guests in attendance in the chapter's history, despite a severe storm. Chapter Vice Chairman, Lee Everett, Key Company, presided, Chairman J. O. Klein having moved to Lufkin, Texas, where he is associated with Texas Foundries, Inc. Mr. Everett announced that Mr. Klein would continue as honorary chairman for the year at the request of the Board of Directors. Louis Desparois, Pickands Mather and Company, chairman of the Fall Conference Committee, reported that the conference would be held October 5, 6 and 7 at St. Louis, and that it was expected this would be made a much more extensive affair than in the past. He announced the various committee chairmen for the conference as follows:

Registration and Arrangements—H. Goodwin, Medart Co.

Visitation and Transportation—M. A. Bell, M. A. Bell Co.

Program—R. A. Jacobsen, Carondelet Foundry Co.

Entertainment—L. J. Filstead, John C. Kupferle Foundry Co.

Publicity and Finance—J. W. Kelin, Federated Metals Div., American Smelting and Refining Co.

Chairman Everett next presented C. E. Hoyt who outlined

the various A. F. A. activities, stressing the Cincinnati convention. Mr. Everett then introduced Marshall Post, president of the Association and vice president, Birdsboro Steel Foundry and Machine Co., Birdsboro, Pa. Mr. Post gave a most interesting talk, well illustrated with slides and films of the Randupson process of producing castings by the cement mold process.

Michiana Chapter

The Michiana Chapter held its third meeting at the Oliver Hotel, South Bend, Ind., on February 10, with some 100 members and guests present. The meeting was opened by Chapter Chairman Martin Lefler, who first introduced C. E. Hoyt, executive vice president of the Association. After Mr. Hoyt had given the members a review of the national association activities, President Marshall Post was introduced. He congratulated the chapter on its fine showing as one of the newest chapters and conveyed the greetings of the other officers and directors. Mr. Post then gave his talk on the cement molding process as presented before the St. Louis Chapter the preceding evening.

In closing the meeting Chairman Lefler announced that the March meeting would be on the 15th with the speaker, Donald J. Reese, International Nickel Co.,

New York. Mr. Reese, Chairman of the Metropolitan New York-New Jersey Chapter, is to talk on cupola operation.

Chicago Chapter

The regular monthly meeting of the Chicago Chapter was held February 13 at the Medinah Club with Chapter Chairman L. H. Rudesill, Griffin Wheel Co., presiding. Some 200 members and guests were present to greet President Post, Executive Vice President C. E. Hoyt and National Director Al Walcher, American Steel Foundries. As a preliminary feature, H. W. Ufer, Griffin Wheel Co., Chicago, gave a showing of the movie film on the story of chilled car wheels as developed by the Association of Manufacturers of Chilled Car Wheels. This film is an exceptionally well developed, educational one showing the construction, manufacture and inspection methods used and was thoroughly enjoyed by those in attendance.

Following this showing, Chairman Rudesill introduced Mr. Hoyt who spoke on association and chapter affairs. President Post was introduced by Mr. Walcher, who had been associated with Mr. Post at the American Steel Foundries at East St. Louis, Ill. President Post's talk on the Randupson process was found extremely interesting and a good discussion followed his presentation.



B. J. Voll



O. A. Pfaff



H. Klouman

Mr. Voll is Vice-Chairman and Messrs. Pfaff and Klouman Directors of the Michiana Chapter

Northeastern Ohio Chapter Discusses Shop Equipment

AT THE first meeting in the new quarters in the Guild Hall, Cleveland, February 9, approximately 200 members and friends of the Northeastern Ohio Chapter, A. F. A., listened to an interesting program on various types of shop equipment presented in 20-minute talks by representatives of seven manufacturing companies engaged in that field. Subjects included core blowing machines, cupolas and cupola charging equipment, mold handling equipment, recent development in core oven design, molding machine developments, cleaning equipment and methods for the modern foundry, the solution of dust control problems. Arthur J. Tuscany, Tuscany, Turner & Associates and executive secretary Foundry Equipment Manufacturers' Association served as technical chairman.

Discussing core blowing machines, Russell F. Lincoln, sales manager Osborn Mfg. Co., Cleveland, stated that the success of the process depended on three main factors, the machine, the corebox and the sand. With the first two designed, constructed and operated properly, sand mixtures may be developed to serve satisfactorily in a wide range of cores. With the aid of several slides he explained the principles of the machine, how it is operated and the many advantages it presents under certain conditions. Up to the present machines have been built capable of producing cores weighing 50 pounds and measuring 36 inches in length.

L. D. Reed, foundry engineer the Whiting Corp., Harvey, Ill., claimed that mechanical charging of the cupola has lagged behind the general trend toward mechanization, not only in the foundry, but in industry generally. He presented illustrations and figures to prove the advantages of the method over the usual hand charging methods. H. L. McKinnon, vice president, C. O. Bartlett & Snow Co., Cleveland,

land, briefly outlined the gradual evolution of mold handling equipment before presenting illustrations and descriptions of equipment and methods in use recently. C. A. Barnett, general manager Foundry Equipment Co., Cleveland, presented a brief description of the principles underlying proper core drying, followed by a running comment on a number of slides showing various types of modern mold and core drying ovens.

Slides showing two modern molding machines, one designed for high speed production on duplicate parts, and the other designed primarily for miscellaneous production in the jobbing

shop, were utilized by Leon F. Miller, sales engineer, Osborn Mfg. Co., Cleveland, in presentation of his discussion on molding machine developments. Frank Pedrotty, engineer, American Foundry Equipment Co., Mishawaka, Ind., discussed the five usual methods of cleaning castings, wire brushing, tumbling, pressure blasting, water blasting and centrifugal blasting. Under certain conditions each method presents certain advantages and disadvantages. According to the speaker the centrifugal method in which metal abrasive is thrown against the castings from a rapidly revolving wheel is the fastest and most economical method so far devised. Interesting solution of many dust control problems was presented by F. A. Ebeling, sales manager, the W. W. Sly Mfg. Co., Cleveland.

Forehearths and Teapot Ladles Before Ontario Chapter

By G. L. White,* Toronto

THE Ontario Chapter at its January 20 meeting held a very interesting round table discussion on forehearths and teapot ladles, using home talent with John Thwaites, foundry superintendent, Beatty Bros., Ltd., Fergus, Ont., and Hugh Davis, chemist, International Harvester Co., Ltd., Hamilton, presenting the metallurgical advantages of these pieces of equipment. The meeting was held at the Carls Rite Hotel, Toronto, with Mr. Thwaites, the advocate for the forehearths and Mr. Davis for the teapot ladles.

Describing his experience with the forehearth, Mr. Thwaites pointed out that it is usually circular and that correct dimensions are essential for satisfactory operation. The diameter of the forehearth should be approximately the same as that of the cupola at the melting zone, but if larger capacity is required, diameter, rather than depth, should be increased. To speed up heating of the forehearth, a mini-

mum of brick and a maximum of insulation consistent with good design should be used. In theory the cupola forehearth is used for two main reasons: (1) To insure greater uniformity in the metal through mixing out of contact with coke; (2) To permit the furnace to melt more uniformly through more continuous operation.

Certain advantages for the teapot ladles as compared to the forehearth were claimed by Mr. Davis in describing his experience with the former type of equipment. The advantages of the teapot ladle may be enumerated as follows: (1) Better mixing of the metal. The time which the metal stays in the ladle, the churning action of the stream from the cupola, and the comparatively large amount of metal in contact, combine to give better mixing than could be secured in the cupola or the pouring ladle. (2) The iron is given time to rid itself of entrapped impurities. As long as the iron is fluid enough to flow well, impurities will keep rising to the

*Canadian Metals and Metallurgical Industries and Official Reporter for Ontario Chapter.

surface. (3) There is a better chance of approaching continuous pouring with consequently hotter metal. (4) An excellent opportunity is provided for the treatment of the metal for the removal of sulphur or oxides, and for the addition of alloying elements that are better added in the ladle. (5) Improved machinability results from the removal of sulphur and oxides and from the increased uniformity of the metal. (6) The percentage of scrap used in the iron may be increased, since any bad effects

can be completely counteracted by a good refining programme utilizing suitable cleaner and desulphurizer in the ladle. Scrap additions as high as 80 to 90 per cent can be realized in this manner with satisfactory results. The teapot ladle results in the production of a stronger, cleaner, more uniform iron at lowest cost and the foundry is provided with an iron that is more fluid even when the temperature is not so high. This permits running with lower phosphorus content which is reflected in products with better resistance to shock.

inations from the floor, these men were declared elected. Chairman Judson then introduced the newly elected officers and directors. He next introduced R. K. Glass, Republic Steel Corp., Buffalo, and Treasurer of the Buffalo Chapter. Mr. Glass, on behalf of the Buffalo Chapter, presented each of the officers of the baby chapter with toys emblematic of baby days. In a more serious mood and in token of friend-

Central New York Chapter Formed

THE sixteenth chapter of the Association became a reality the evening of February 10 when a group of members and guests met at the Onondago Hotel, Syracuse, N. Y., and organized the Central New York Chapter. Last December a petition had been submitted to the A.F.A. Board of Directors for a chapter in this territory which was approved and a call for the meeting sent out from the A.F.A. office. Despite bad road conditions some eighty were present when the meeting was called to order by H. H. Judson



H. H. Judson
Chairman, Central New York Chapter

of Seneca Falls, N. Y. Mr. Judson introduced R. E. Kennedy, Secretary of the Association, who gave a brief review of the Association's work and organization. He then called for a report of a committee which had been appointed to nominate chapter

officers and directors. This was presented by W. H. Thomas, president, Straight Line Foundry and Machine Corp., Syracuse. Those placed in nomination were

Chairman—H. H. Judson, Fdry. Supt., Goulds Pumps, Inc., Seneca Falls, N. Y.

Vice Chairman—F. C. Wheeler, Kimman & Wheeler, Syracuse, N. Y.

Secretary—L. D. Wright, U. S. Radiator Co., Geneva, N. Y.

Treasurer—E. J. Bair, Gen. Supt., Utica Radiator Corp., 2201 Dwyer Ave., Utica, N. Y.

Directors to serve one year:

A. C. Davis, Prof., Dept. of Experimental Engineering, Cornell University, Ithaca, N. Y.

L. E. Hall, Asst. Supt., Syracuse Chilled Plow Co., Syracuse, N. Y.

J. J. Jardine, Vice Pres., Caldwell & Ward Brass Co., Syracuse, N. Y.

To serve two years:

Leo Lonergan, Morris Machine Works, Baldwinsville, N. Y.

G. M. Thrasher, R. Lavin & Sons, Inc., Elmira, N. Y.

W. G. Jones, Supt., International Heater Co., Utica, N. Y.

To serve three years:

F. F. Shortsleeve, Elmira, N. Y.
N. H. Boardman, Met., Elmira Foundry Co., Elmira, N. Y.

J. W. Barker, Pres., Andes Range & Foundry Co., Geneva, N. Y.

As there were no further nom-



A. C. Davis, Cornell University



Leo Lonergan, Morris Machine Works
Two Directors of Central New York Chapter

ship and cooperation of his chapter he presented Chairman Judson with a beautiful bouquet and told of the advantages to the foundrymen of the district of having a chapter in the territory.

Following this organization work, Mr. Glass gave an unusually interesting and instructive, illustrated talk on pig iron, its properties and manufacture. This talk was followed by a showing of the technicolor film—"Steel, Man's Servant"—furnished through the courtesy of the U. S. Steel Corporation.

AMERICAN FOUNDRYMAN

Southern California Discusses Molybdenum

By M. S. Robb,* Los Angeles, Calif.

THE Southern California Chapter of the A.F.A. held its regular monthly dinner meeting on January 26, 1939, at the Clark Hotel, Los Angeles, with an attendance of 94. The coffee talk featured F. C. Emory, engineering supervisor of the Air Reduction Sales Company, who gave a demonstration of the use of liquid air, showing contraction and expansion of metals through the medium of a cooling liquid. The guest speaker of the evening was Russell F. Lincoln, sales manager of Osborn Manufacturing Company of Cleveland, Ohio. Mr. Lincoln, who is treasurer of the Northeastern Ohio Chapter, extended greetings from Headquarters and the National Officers. His illustrated talk on the application of molding machines to modern foundry problems was well received.

The technical talk was on molybdenum, delivered by John E. Wilson, metallurgical engineer of Climax Molybdenum Company, also a director of this chapter. Mr. Wilson's use of many slides showed more clearly

the story of molybdenum. He traced the history of molybdenum from the time of the Greeks, who were apparently familiar with the ore, molybdenum sulphite, and the time of its first commercial use in sword blades in 1300 A.D. to its present day use in the iron and steel industry.

The use of molybdenum in gray iron has grown very rapidly, for it is used extensively alone and in conjunction with Cr, Ni, Cu and V to improve the physical properties of cast iron, especially the tensile, transverse and impact strength and wear resistance. During the discussion of the effect of molybdenum upon the physical properties of cast iron it was pointed out that late additions of silicon were a very effective means of modifying the dendritic graphite distribution and improving the tensile and transverse properties. Mr. Wilson added information on the various uses of molybdenum and its effects on improving cooling properties.

*Bethlehem Steel Co., and Secretary, Southern California Chapter.

Sand Symposium Held by Metropolitan Philadelphia Chapter

By J. T. Fegley,* Philadelphia, Pa.

THE regular monthly meeting of the Metropolitan Chapter of the A.F.A. was held in the Engineers Club on Friday evening, February 10th, and in spite of bad weather approximately 125 members and guests were in attendance. Due to the illness of Mr. Henszey—the chairman, vice-chairman W. C. Hartmann acted in his stead. Lee W. Harris, Link Belt Co., introduced the after dinner speaker, the Rev. Philip J. Steinmetz—rector of St. Paul's Church, Elkins Park, Pa., who gave a very interesting and instructive talk on "The Art of Living."

The main subject of the evening, "Sand," was ably taken care of by four speakers who were introduced by John Juppenlatz of the Treadwell Engineering Co., Easton, Pa., who acted as technical chairman for the "Symposium on Sand" by members of our Philadelphia Chapter. The first speaker, Clarence Thompson of the New Jersey Silica Sand Co., spoke briefly on "Washed and Graded Molding and Core Sands," pointing out that sands were no longer just loaded in cars direct from the banks; that sand shippers are required to grade, mix and test all sands shipped; that the foundrymen today demand close gradation to meet their require-

ments in order to produce better castings. He also explained the special care necessary in selecting sands for special purposes, such as used in the Randupson or cement molding process, and the various uses of silica sands.

Michael L. McGuire of the Geo. F. Pettinos Co. was the next speaker, his topic being "Millville Gravels and Their Uses." Mr. McGuire expressed his opinion that Millville Gravel was a foolproof sand for all types of heavy castings when properly used; that it had high refractory qualities, but that it should always be rammed hard in order to avoid penetration of the metal and to eliminate rough castings and defective castings due to draw downs and blows. He pointed out the hazards of improperly using pitch compounds, also that high moisture gives trouble. It was his opinion that not enough attention was being given by foundrymen to the backing sands, which should be of the same permeability as the facing sand or higher, and that one foundry he knew of used a permeability of 350 in producing high quality castings in sizes up to 50 tons each; that dry sand molds should always be thoroughly dried for best results.

Cy Sommers of Whitehead Bros. Co., N. Y. C., then read a paper by Mr. Miller, president of his company, who was unable to attend due to illness. Mr. Miller's paper gave the "History of Albany Sands," pointing out this type of sand was world known and shipped to every country in the world; that different locations gave different sands; that grain size and grades were vastly different from each location. He pointed out that all are hand selected; that most sands were screened; and that the supply of sands is sufficient for many years to come due to the advent of motor trucks and good roads which enabled producers to open up deposits as far as five miles from the loading points. It was his belief that Albany sands were foolproof for the production of light and medium castings.

*North Bros. Mfg. Co. and Chairman Publicity Committee, Philadelphia Chapter.

M. R. Taggart, President of Taggart & Co., Philadelphia, then spoke on "Naturally Bonded Molding Sands" especially adapted for castings from 50 lbs. to 10 tons. He pointed out how the foundrymen's requirements made it necessary for the producers to develop special equipment in order to properly prepare the sands for shipment; that bond was nature's product in the sand; that sands of pure silica content were best, those having as much as 99% had high heat resistance qualities. More attention by foundrymen should be paid to the sintering and fusion point of sand and good sands should test at 2300° F and 3100° F

respectively. He pointed out the importance of moisture, which should be as low as possible for best results. Mr. Taggart pointed out that foundrymen doing dry sand work should be well acquainted with all the properties of the sand they are using, particularly as to iron oxide and lime content, which if in excess of 2½% would cause considerable trouble; that the sintering and fusion point should be considered and that in addition the best types of blacking should be used. Mr. Taggart expressed the opinion that tests for dry strength were vitally important in all sands and he would welcome any discussion on this point.

employed until the metal starts to melt, at which time the furnace atmosphere should be changed over to the slightly oxidizing side. A glass slag is the best cover. Charcoal, if used, should be dry and in lump form.

Overheating

Overheating, or holding the metal in the molten condition for an undue period or time, should be avoided. If a glass slag is used, it should be removed before adding the deoxidizer. The quantity of deoxidizer used will depend upon the nature of the charge, although generally 1 to 2 oz. of phosphor-copper per 100 pounds of metal is sufficient. Silicon should not be used in red brasses or bronzes, and aluminum is detrimental to the red brasses only. Magnesium may be used as a deoxidizer, but if any of this is retained as part of the melt it will impair the fluidity. Mr. Thieme's talk was greatly enjoyed, as evidenced by the sparkling discussion which followed.

Thieme Discusses Non-Ferrous Castings Before Metropolitan N. Y.-N. J. Chapter

By T. J. Wood,* Passaic, N. J.

THE February 6th meeting of the Metropolitan N.Y.-N.J. Chapter was held at the Essex House, Newark, N. J., with Chairman Don Reese presiding. Over 60 members and guests were present to hear Carl O. Thieme, metallurgist of H. Kramer & Co., Chicago, Illinois, talk on "Non-Ferrous Castings."

Confining his discussion to the red brasses and bronzes, Mr. Thieme detailed the numerous factors which must be dealt with in the production of sound castings. With molding technique established upon a sound basis, several precautions must be taken in the melting process if good results are to be obtained.

Gas Absorption

Gas absorption, with subsequent release during solidification in the mold, is the most frequent source of difficulty and care must be taken if this condition is to be avoided. Even after having achieved the proper melting furnace atmosphere, many foundries have encountered trouble simply from the gas absorbed by preheating gates and sprues over the furnace exhaust flame during melting.

Mr. Thieme recommended that

for melting red brasses or bronzes, a neutral or slightly reducing atmosphere should be

Buffalo Chapter Considers Casting Design

THE February meeting of the Buffalo Chapter, held on the 6th, was devoted to a discussion of casting design. Dining at Gerry's Restaurant, there were about

who displayed exceptional talent at the piano, accordion and mandolin, proving that they were able to make music as well as steel castings.



M. W. Pohlman

60 members in attendance, with Chapter Chairman M. W. Pohlman, Pohlman Foundry Co., presiding. Preliminary to the evening's meeting, the chapter was entertained by local foundry talent, two molders, Mr. Fisher and his son, from Bingham & Taylor,

E. A. Piper, foundry engineer, Pohlman Foundry Co., gave the evening talk, presenting casting design from the engineer's viewpoint. He showed illustrations of some of the best ways to pour castings. During the discussion period many of the local foundrymen who had never before ventured remarks were found anxious to present their views on this interesting topic.

The speaker for the next meeting, March 6, was announced as C. W. Briggs, Technical Director, Steel Founders' Society of America, Cleveland, Ohio. Mr. Briggs will have as the subject of his paper, "Solidification, Shrinkage and Contraction of Metals"—one which he is especially fitted to handle because of the research work he conducted on it while with the Naval Research Laboratory.

*Robins Conveying Belt Co. and Secretary, Metropolitan N. Y.-N. J. Chapter.

Apprentice Training



Successful Apprenticeship

By J. E. Goss,* Providence, R. I.



J. E. Goss, chairman of the A.F.A. Committee on Papers and Program for Apprentice Training, is connected as apprentice supervisor with Brown and Sharpe Manufacturing Company, a company which has what is probably the oldest organized apprentice training system in this country. Its apprentice graduates in all lines of mechanical trades are known for the successes they have later attained.

A SUCCESSFUL APPRENTICESHIP system calls for very careful selection of those who are to be trained. When we need a new machine for the foundry, it is not common practice to take what is offered by the first salesman who happens to call on us. Instead, we compare numerous makes of the machine, we study results of tests and otherwise we try to choose intelligently.

Our best laid production plans will not work out satisfactorily if our equipment is not right for the job. Exactly the same thing is true of apprenticeship. Our plans for producing competent molders and executives will go amiss unless we get the

right material in the first place, and then train it properly.

One of the failures of apprenticeship might rightly be charged to taking young men simply because they are relatives or friends of someone in the organization. Selection on some definite, well considered basis should do two things. It should be the means of securing better apprentices, and it should eliminate what might be called shop politics.

Years ago we were told that young men preferred office jobs to work in the foundry. Whether or not this ever was true, there are plenty today who could easily be shown the possibilities in foundry work, and who gladly would accept our apprenticeship opportunities.

This fact, if we accept it as such, makes selection even more important. The large number of applications which we might accept, makes it possible for us to get better material, but whether or not we do improve our apprentice personnel, depends in great measure on the means at our command and the care that we exercise in selection.

The Third Side of the Triangle

By J. E. Kemp,* Kewanee, Ill.

THE TRIANGLE is the one geometrical figure whose shape cannot be changed without altering the length of one or more sides. It is the simplest, the irreducible shape which we see in all bridges and truss designs. You cannot enclose an area with less than three lines and once enclosed that area is fixed. Only by increasing one of its sides can the area of a triangle be enlarged.

Apprenticeship training is a three-sided affair and the importance of the third side has not been sufficiently emphasized. In the selection of apprentices, the first question to be settled is, "Is he physically fit?" With that satisfactorily answered, then by means of questions or a written quiz, an attempt is made to determine the extent of his mental ability. On the basis of previous experiences with other human beings, an estimate also

is made of the relative value of his "personality" which word sums up his ability to get along with people.

These three elements—*physical, mental and personal*—form the three sides of every human triangle, and the extent to which they are developed determine the size or importance of a man in his line of work. On the physical side are included: health, strength, and the skills of his craft. On the mental side are: knowledge of the materials, tools and processes of his trade, a mind trained to apply more or less quickly and accurately the information, rules and standards of mathematics, drawing, etc., and sufficient imagination to foresee and plan the successive steps in his work. On the third or personal side of the triangle are included all those qualities of his which, apart from his work, make him the man that he is. A man's personality is determined for him by varying combinations of

*Supervisor of Apprenticeship, Kewanee Works, Walworth Co., and member Apprentice Committee A.F.A.

his selfish instincts, habits and environment, his planned purposes and his religious beliefs. His personality can be made over by changing any one of these, but it is a more intangible subject to work on than either his physical or mental abilities.

Given a workman well equipped physically and mentally, his value to himself and his company will depend on his ability to get along with people. Apprentices should be made to realize this fact and then coached in its accomplishment. Personality instruction had best be given individually because it must be fitted to the particular needs of each. Apprentices from the nature of their work have an unusually good chance to develop along this line because they contact and work with so many groups of men during their course of training. They should strive every day, not only to do good work and enough of it, but also to make themselves so respected and liked by their foreman and fellow-workmen that they will be welcome if permanently assigned to that department. By avoiding taking sides in petty discussions, by being carefully fair and square with everyone, by taking more than his share of the heavy or dirty work, by care in using, cleaning and returning tools, in short by selling himself as a good fellow-workman each day, an apprentice has a splendid chance to develop the personal leg of his triangle.

Apprentices are picked to produce more than craftsmen from their number. They should be executives-in-the-making, and learn what makes people behave as they do. It is a maxim in military training that you cannot know how to command

till you have learned to obey. Just so should an apprentice learn how to lead others in doing what is to be done. Teach him to plan his shop conduct in a way to please his associates, in other words—to “sell himself” through the quality of his work and his pleasing behavior even under aggravating circumstances.

The reaction to this effort on his part will be more rapid progress in his craft, for his mind and heart will be more happily disposed toward his work, and he will have more friends helping him over the hard places. Also there is this great possibility in such an effort. Sometime in the life of every boy that makes good, there is born a determination to do, to go on to some objective that he may set for himself or have set for him by others. In either case his success begins with that will to do, and until such a moment when he takes command, an instructor, parent or advisor is handicapped. Often a boy on learning by experience the value of that third side of the triangle develops such an initiative, and then he becomes an apprentice that is worth watching.

This “personal side” of apprentice training requires a closer contact and understanding between the supervisor and boy but it is conservation of the highest order. The more dependence on apprentices for executive material, the greater the importance of this side of the triangle. There is so much “human engineering” required in successfully negotiating a life time of human contacts in this day and industrial age, that it is a safe bet to claim the third or personal side of the human triangle as the most important.

Southern California Starts Apprentice Course

WHEN last fall, the Southern California Chapter appointed an Education and Apprentice Committee, this committee took its job seriously and now has some definite accomplishments to which it can point with pride. The committee is under the chairmanship of Robert Gregg, foundry manager, Reliance Regulator Corp., Alhambra, Calif. Serving with him are A. E. Falk, D. & M. Machine Co.; R. J. Crichton, American Brake Shoe & Foundry Co.; Arthur Richardson, National Supply Co., and Jas. E. Eppley, Kinney Iron Works.

The committee decided there was a need for evening courses for apprentice molders and core makers and met with representatives of the school board who have charge of the evening trade

schools to discuss possibilities. The school authorities had to arrange for a budget to pay for the instruction and a place for holding courses. The A.F.A. Committee agreed to show a definite desire on the part of foundry managements for a program of apprentice training. Accordingly the chapter committee sent out a questionnaire to all foundries as to their attitude toward evening classes for apprentices and enough responded to justify the school.

The school board representatives attended a chapter meeting and outlined what could be done in furnishing an instructor and offered the use of the Manual Arts High School foundry in which to hold classes. It was decided to start with apprentices from gray iron foundries and to

hold classes one night each week for ten weeks with one hour for technical instruction and two hours for practical molding or coremaking practice. The apprentices at the end of their course are to be transferred to the pattern shop for a six weeks' course in the fundamental principles of pattern working.

To select the boys for this course letters were sent out to the various foundry managements to nominate apprentices with preference being given to those having one to three years' experience. As more were nominated than could be accommodated a further selection was made by the chapter committee and the school board. It is understood, however, that additional evening classes will be arranged if continued interest is shown. The course was started on January 4 and reports from apprentices attending indicate that the whole idea is successful.

Abstracts

Note: The following references to articles dealing with the many phases of the foundry industry, have been prepared by the staff of *American Foundryman*, from current technical and trade publications.

When copies of the complete articles are desired, the Association will be pleased to furnish the address of the publication, or photostat copies may be obtained by ordering through Engineering Societies Library, 29 W. 39th Street, New York, N. Y.

Alloys

NON-FERROUS. "Non-Ferrous Foundry Has Wide Range of Alloys Available," by N. K. B. Patch, *The Foundry*, vol. 67, no. 1, Jan. 1939, pp. 32, 33, 76. The author has endeavored to prepare a list of the most well known and common non-ferrous alloys. The compositions with the approximate melting points and the range within which the pouring temperature will be most common are listed. Also the standard specifications and physical properties of the various non-ferrous alloys are given. (al.)

Cast Iron

BRAZING. "Furnace Brazing of Cast Iron," by H. M. Webber, *Iron Age*, vol. 143, no. 5, Feb. 2, 1939, pp. 55-57. Electric furnace brazing of cast iron calls for precautions usually unnecessary in the case of low-carbon steel. These precautions, together with possible causes of distortion in furnace-brazing assemblies in general are dealt with in this article. Discussion of distortion includes an interesting example of how strains from unequal expansion were successfully overcome. This article is continued in the next issue. (C.I.)

ENAMELING. "Enameling Troubles," by S. W. Vickey, *Foundry Trade Journal*, vol. 60, no. 1168, Jan. 5, 1939, pp. 10-11. This paper was read before the Midland section of the Institution of Vitreous Enamellers. The author lists a number of enameling defects such as change in design, faulty material, copperheading, flaking and rusting and fishscaling. He then gives the various reasons why they occur and how to prevent them. The discussion following this paper is also included. (C.I.)

HIGH DUTY. "High-Duty Cast Irons for General Engineering Purposes," *Foundry Trade Journal*, vol. 59, no. 1167, Dec. 29, 1938, pp. 483, 484, 492. This article is the second part of a report of the research committee of the Institution of Mechanical Engineers, the first part appearing in a previous issue. The committee continues listing physical properties and what values are to be expected for each. (C.I.)

LOW CARBON. "Shop Problems in Low Carbon Iron," by A. P. Lee, *The Foundry*, vol. 67, no. 1, Jan. 1939, pp. 28, 29, 74. This is the second and concluding part of a paper presented before a meeting of the Connecticut Foundrymen's Association at Meriden, Conn. The author continues his discussions of these irons and advises that internal and external shrinkage be given more consideration. Also that the various departments of a foundry cooperate on new ideas and new irons. (C.I.)

MOLYBDENUM. "Produces High Strength Iron," by G. A. Timmons, V. A. Crosby and A. J. Herzig, *The Foundry*, vol. 67, no. 1, Jan. 1939, pp. 30, 31, 86, 88. This is the second and concluding article on an investigation conducted by the authors on the effect of molybdenum on super cast irons. The authors continue describing the properties and results obtained on the 15 irons examined. The chemical analysis of some heats with tensile strength of 80,000 lb. per sq. in. are given. Various micrographs of the irons are also produced. (C.I.)

SILICON CARBIDE. "Silicon Carbide Additions to Cast Iron," by J. A. Boyer, *Metals and Alloys*, vol. 10, no. 1, Jan. 1939, pp. 8-12. The problem of additions to cast irons, when they should be made, and their nature, is of perennial interest to foundrymen. The author presents the thesis that the addition of silicon and carbon in the form of silicon-carbon accomplishes certain results which are not duplicated by ordinary silicon and carbon additions. The etching technique and the evidence that the phosphide eutectic is a complex, rather than a definite entity, and hence is susceptible to alteration by adjustment of composition is one of the interesting parts of the article. The article is to be concluded in another issue. (C.I.)

Design

CASTINGS. "Cooperation Between Foundry, Drawing Office and Machine Shop," by I. H. Jungbluth, *Foundry Trade Journal*, vol. 60, no. 1170, Jan. 19, 1939, pp. 81-83. Official German exchange paper to the Polish International Foundry Congress. The cooperation between foundry, drawing office and machine shop should be governed by the following three points of view: (1) Choice of suitable material; (2) Correct design from the point of view of casting, and (3) Correct design from the point of view of machining. These points and the position already attained in Germany is described by the author. Also numerous curves and drawings are given to illustrate various points. (D.)

Fuels

PULVERIZED COAL. "Pulverized Coal," by C. F. Herington, *The Iron Age*, vol. 143, no. 3, Jan. 19, 1939, pp. 27-29, 57. For firing metallurgical furnaces, pulverized coal went through its heyday in 1915-1925. The many difficulties of that period re-

sulted from inexperience, but persistent engineering has so lifted efficiency that the fuel warrants careful consideration for new or revamped furnace installations. (Fu.)

Malleable

WHITE IRON. "Some Notes on the Malleabilization of White Iron," by M. Le-royer, *Foundry Trade Journal*, vol. 60, no. 1168, Jan. 5, 1939, pp. 6-8. The author sets out the methods available to the metallurgist for utilizing the relative importance of the role played in graphitization or decarburization during annealing, and from these factors modifying the structure and properties of the final product. A number of curves and micrographs are given to better illustrate the various points. (M.)

Magnesium Alloy

MAGNESIUM. "Magnesium Metal," by P. D. V. Manning, *The Metal Industry* (London), vol. LIII, no. 16, Oct. 14, 1938, p. 370. This is a much condensed version of an article which appeared in the September issue of *Chemical and Metallurgical Engineering*. The importance of magnesium in the non-ferrous metal industry has increased considerably of recent years. Although production has not reached the state where magnesium can be called a common metal, many countries, particularly Germany, are making great efforts to raise their production of this metal because of its great importance to the aircraft industry. (N. F.)

Materials Handling

APPARATUS. "Recent Design Innovations in Material Handling Apparatus," by F. J. Oliver, *The Iron Age*, vol. 144, no. 22, Dec. 1, 1938, pp. 49-53. A number of new types of fork trucks have been placed on the market, one a small gasoline powered type for loading freight cars to ceiling height if desired. Several Accessories for battery trucks are illustrated. Developments in the field of overhead hoists and monorails have been many. Among hand propelled units are reviewed several designs of hand lift trucks. New type of stocking and storage bins are also included in the article. A photograph is included with the description and name of the manufacturer of the various apparatus. (M. H.)

CORE AND MOLD EQUIPMENT. "Foundry Drying and Modern Coreshop Layout," by W. H. Smith, *Foundry Trade Journal*, vol. 59, no. 1164, Dec. 8, 1938, pp. 423-426. This article was abstracted from a paper read before the Lancashire Branch of the Institute of British Foundrymen. The author describes advantages gained by various plants employing new core and mold handling equipment. He also illustrates two proposed layouts of coreshops and gives various photographs showing the procedure employed by certain plants. (M.H.)



LIFT TRUCKS. "Handling Melts," by G. E. Stringfellow, *Steel*, vol. 103, no. 26, Dec. 26, 1938, pp. 42-44, 59. Lift Trucks charge annealing furnaces and deliver castings to finished department. Also carry molten metal from cupola to crane area and to distant parts of the foundry floor. Illustrations are given to clarify the various operations. (M.H.)

VIBRATING SCREENS. "Vibrating Screens and Conveyors," by F. Juraschek, *The Iron Age*, vol. 142, no. 24, Dec. 15, 1938, pp. 37-41. This article describes various types of vibrating screens and conveyors that are used by various industries. Vibrating principles are given with a detail explanation of each. The author gives photographs to better illustrate the types of screens and conveyors. (M.H.)

Non-Ferrous

ALUMINUM. "Some Applications of High Strength Aluminum Casting Alloys," *Metallurgia*, vol. 18, no. 108, October, 1938, pp. 191-193. Fields for the further application of high strength aluminum alloy castings are briefly reviewed. Attention is directed to newly developed alloys for which increased applications may confidently be expected. In addition to the scope offered by aircraft construction, the high properties of many alloys provide increasing possibilities in the general engineering field. Some of the applications include cylinder heads (air cooled), brake shoe, gear housing, differential cover, clutch plate, rear axle housing, impeller, and such. (N. F.)

BRASS. "Brass for Pressure Castings," by N. K. B. Patch, *The Foundry*, vol. 66, no. 12, Dec. 1938, pp. 34, 86. With the increased use of engineering requirements in the foundry the old methods and procedures in many cases are becoming out of date. Therefore, modern metallurgy has been forced to develop alloys or variations of alloys to meet these engineering requirements. Therefore, with this in mind the author outlines in this article some of the interesting facts known to many metallurgists that may have escaped the attention of some foundrymen when trying to meet these requirements. (N.F.)

CASTINGS. "Age-Hardenable 5 per cent Nickel Bronze. Production and Properties of Castings," by T. E. Kihlgren, *The Metal Industry*, vol. 53, no. 16, Oct. 14, 1938, pp. 363-366; no. 17, Oct. 21, 1938, pp. 399-401. Paper presented at the A.F.A. convention, 1938. The properties and foundry production of an age-hardenable nickel-bronze mixture of moderate cost and broad utility are presented. (N. F.)

COPPER. "Oxygen-Free Copper," by C. G. Goetzel, *The Metal Industry*, (London), vol. 53, no. 26, Dec. 23, 1938, pp. 605-608. This article is a slightly condensed version of a paper recently read before the A.S.M. The author describes the results of tension, conductivity, fatigue and other tests made on as-cast materials and on wires, rolled and drawn from bars cut from the castings. (N.F.)

FOUNDRY PRACTICE. "Non-Ferrous Foundry Practice," by J. Laing and R. L. Rolfe, *The Metal Industry* (London), vol. 53, no. 22, Nov. 25, 1938, pp. 509-513. This article on copper and straight brasses is the fourteenth by the authors in the field of non-ferrous subjects. Various classes of brasses are described. With abnormally thin castings, the running power of the metal will be increased by lightly dusting powdered resin over the surfaces of the

runner and mold. The burning of the resin partially prevents the production of oxide, which hinders free running. Gating and risering is of prime importance and should be so constructed that free gravity feeding is allowed. The authors give various diagrams and tables of data to better illustrate the important points of this article. (N.F.)

MANGANESE BRONZE. "Non-Ferrous Foundry Practice," by J. Laing and R. T. Rolfe, *The Metal Industry*, (London), vol. 54, no. 1, Jan. 6, 1939, pp. 7-10. The manganese bronzes have in general a strength equivalent or superior to that of mild steel, combined with good ductility and high resistance to corrosion, so that they are eminently suitable for use in contact with sea water and where fairly high stresses must be carried. Structure, gating, risering and shrinkage are important in producing successful castings of this material. With a description of these various procedures the author gives a number of tables and diagrams to better illustrate the points brought out. (N.F.)

MELTING. "Pulverised Fuel for Lead Melting," *The Metal Industry* (London), vol. LIII, no. 10, Sept. 2, 1938, pp. 219-222. An interesting development in the use of pulverised fuel is described in this article. A Birmingham company has replaced oil firing of their lead melting pots by pulverised fuel, and has effected substantial economies thereby in fuel cost. "It is stated to be the first of its kind in England, if not in Europe and the world." The article describes the features, pulveriser, coal selection, drying, distribution and construction of the melting unit. (N. F.)

MOLDING. "Molding Materials for Non-Ferrous Metals," by F. W. Rowe, *The Iron Age*, vol. 144, no. 22, Dec. 1, 1938, pp. 37-39, 75. This article is an abstract of a lecture presented before the Midland Metallurgical Societies, Birmingham, England, Oct. 13. In the foundry industry the non-ferrous branch has received the least technical help of all, and the operation of this branch that received the least help is molding. In order to review generally the various mold materials and methods connected with them, the author divides into two broad fields the advantage and disadvantage of each method of mold as regards (a) physical properties, metallurgical properties and soundness of the resulting casting, and (b) cost, rapidity and ease of production.

The author hopes that after having indicated the possibilities that are present some action will be taken by various non-ferrous foundrymen. (N.F.)

MOLDING. "Non-Ferrous Foundry Practice," by J. Laing and R. T. Rolfe, *The Metal Industry* (London), vol. 53, no. 19, Nov. 4, 1938, pp. 443-446. This article deals with the molding practice for phosphor bronze. The authors describe various risering, gating, molding, chilling, feeding and pouring temperature methods for phosphor bronze castings. To better illustrate the various important points, the authors give a number of drawings. (N. F.)

Refractories

FOUNDRY. "Foundry Refractories," by W. J. Rees, *Foundry Trade Journal*, vol. 53, no. 1154, Sept. 29, 1938, pp. 239-240. In this article is discussed silica refractories, especially materials which are known generally as cupola ganisters, and the siliceous materials which are used for ramming.

Thermal changes; physical changes; how control is effected, raw material for cupola ganister; industrial suitability; bending material; fireclay considerations; influence of crushing; water additions, general properties and laboratory testing of cupola ganisters are the general topics covered. (R.)

FURNACE. "Refractories for Miscellaneous Foundry Furnaces with Special Reference to Insulation," by C. D. Cobough, *The Refractories Journal*, no. 11, Nov. 1938, pp. 603-609. This article was adapted from a paper presented at the Fall Conference of the St. Louis Chapter of A. F. A., Missouri School of Mines, Rolla, Missouri. As a result of the recent technological advances in foundry furnace design and practices, greater demands have been imposed upon the refractory materials with which the furnaces are lined. Corresponding advances in refractories technology have led to improvements in the properties of existing types and to the development of new refractory products. The various types of melting and the kind of lines used in each are discussed. (R.)

LADLE. "Study of Soda-Ash Foundry-Slag Attack on the Refractory Lining of a Teapot-Type Reservoir Ladle," by P. S. Dear, *The Bulletin of the American Ceramic Society*, vol. 18, no. 1, Jan. 1939, pp. 4-8. Siliceous fireclay ladle refractories in contact with soda-ash foundry slags are rapidly corroded and eroded, requiring frequent replacement, chemical analysis, prometric cone equivalent tests and petrographic studies of unused brick and of brick after a severe campaign in contact with soda-ash foundry slag have been made.

Safety

CONVEYOR. "Conveyor Hazards," *Safety Engineering*, vol. 76, no. 6, December 1938, pp. 22-24. Observations given in this article will guard against hazards common to all conveying equipment, according to a bulletin of the Employers Mutual of Wisconsin. Conveyors should be operated by trained men, well oiled, frequently inspected, and contain guards wherever necessary are some of the points discussed. (Se.)

ILLUMINATION. "Paint—Instrument of Safety," by J. A. Meacham, *Safety Engineering*, vol. 76, no. 4, October, 1938, pp. 14-16. No one in industry will challenge the value of being safety minded. Yet very few of the safety minded individuals pay very much attention to the fundamental safety principle of paint. The author describes his experiments in which the value of contrast between object and walls is brought out. With properly painted walls, ceilings, machinery, etc., the eye strain and glare is removed. Also the author shows how hazards are removed and illumination is increased, thus reducing expenditures. (Se.)

LIGHTING. "Good Lighting—A Profitable Industrial Asset," by R. W. Chamberlain, *The Iron Age*, vol. 142, no. 19, Nov. 10, 1938, pp. 40-43. The three principal conditions to be met for satisfactory illumination are: (1) sufficient illumination, (2) absence of glare, (3) good distribution of light. At the present time illumination is by means of incandescent, mercury, and combination lamps. A plant which meets the three principles of illumination will, as the author points out by means of dia-

grams and pictures, reap a tremendous saving in both money and injuries. (Se.)

PLANT. "Engineering and Conservation," by W. S. Paine, *Safety Engineering*, vol. 77, no. 1, Jan. 1939, pp. 16-18. The author describes various safety problems studied and the opportunity for engineers to use their ingenuity. Also described and illustrated is a foundry producing castings of varying weights. This foundry has a cement floor with black stripes down the center showing where the molds are to be placed in front of the bench. The walls are painted white and the floors are almost spotlessly clean thus showing how engineers are overcoming the problem of silica dust. (Se.)

WIRE ROPES. "Safe Handling of Wire Rope," by C. D. Meals, *Safety Engineering*, vol. 76, no. 6, Dec. 1938, pp. 19, 20. Wire rope introduction was not particularly welcomed by the workmen because to them it meant a rope not easily handled and protruding broken wires cut hands. However, with increasing knowledge and information on wire rope these faults are being taken care of. The author discusses when ropes should be replaced and just what can be expected of them. (Se.)

Sand

GENERAL. "Sand Research and Scrap Reduction," by T. Tyrie, *Foundry Trade Journal*, vol. 59, no. 1167, Dec. 29, 1938, pp. 479-482. This paper was given at the Falkirk Section of the Institute of British Foundrymen. The first part deals with apparatus that are currently used. The second part covers a series of extremely interesting researches directed toward the solution of foundry defects. Some of the general problems are enameling troubles, sand for bath molding, venting, synthetic sands and patching difficulties. With this article are given 8 tables listing the data found. (SA.)

MOLDING. "Compression Strength and Shearing Strength of Molding Sand," by B. Holman, *Foundry Trade Journal*, vol. 59, no. 1164, Dec. 8, 1938, pp. 429-431. This paper was presented before the Polish International Foundry Congress. The cohesion of molding sand is determined by ascertaining the compression strength or shearing strength of test specimens. Comparison tests have been made in the laboratory for the purpose of ascertaining the method by which the value of molding material could be estimated better and more in agreement with the experience acquired in the foundry. It was very soon found, however, that there was an inviolable relationship between the results obtained by these two methods of testing, so that it was possible to calculate the results obtained by either of the two methods from the results of the other. (Sa.)

Steel

CONTROL. "Instrument Firing," by E. T. W. Bailey, *Steel*, vol. 103, no. 23, Dec. 5, 1938, pp. 54, 55, 73, 74. A modern installation of automatic open-hearth control is detailed, its operation described, character of each instrument pointed out and actual results are listed. (S.)

TEMPERATURE. "Teeming Temperatures," by E. H. Waldman, *Steel*, vol. 103, no. 21, Nov. 21, 1938, pp. 44-45. The author describes the use of the optical pyrometer as a control instrument to aid in improving open hearth practice. Using the pyrometer as a tool in making steel on the open hearth will insure continuity of quality and uniformity, insofar as the temperature factor is concerned. (T.)

Steel Castings

GEARS. "Pitting of Gear Teeth," by J. L. Avis, *Metal Progress*, vol. 35, no. 1, Jan. 1939, pp. 59-61. Teeth on large cast steel gears sometimes become pitted and grooved within the rubbing areas in a manner strongly suggestive of corrosion. A closer examination indicates the trouble to fragmentation of heavily cold worked metal in small areas where stress is concentrated beyond the ability of the metal to resist. (S.)

SPECIFICATIONS. "Specs," by J. H. Hall, *The Foundry*, vol. 67, no. 1, Jan. 1939, pp. 26, 27, 83, 84. The author has prepared a diagram and tabulation of various specifications of the A.S.T.M., Federal, Navy Dept., A.A.R. and A.R.E.A. of Bridges. This data includes chemical analyses, tensile strength, yield point, elongation, reduction of area and bend-degrees. (S.)

Testing

PHYSICAL. "Physical Testing of Metals," by H. W. Russell, *Metals and Alloys*, vol. 9, no. 12, Dec. 1938, pp. 337-339. This paper on the philosophy of testing was delivered before the Battelle Physics of Metals Seminar. Physical testing has come to mean the measurement of those properties which are believed to have engineering significance. Tensile, hardness and impact are most important, while properties more peculiarly in the realm of the physicist, such as electrical and magnetic, are not excluded but are considered important only in special cases. Therefore, this paper is mainly concerned with the mechanical tests, their use, and meaning. (T.)

PYROMETRY. "Application of Pyrometry to Automatic Temperature Control," by W. C. Juram, *Canadian Metals & Metallurgical Industries*, vol. 1, no. 12, Dec. 1938, pp. 322-325, 333. Of the many methods of temperature testing pyrometry is the most widely used. However, many who use this means of obtaining temperature readings know very little about the principles of this method. The author describes the various instruments, correction factors, Thermocouple metals, Location of Thermocouples in Use, Leads, Radiation Pyrometry, Millivoltmeter System, and Potentiometer System. Also various questions submitted by industrial men are presented and answered. (T.)

RADIOGRAPHY. "Some Pros and Cons of Radiography," by G. C. McCormick, *A. S. T. M. Bulletin*, no. 95, Dec. 1938, pp. 25-28. A discussion of some of the relationships between the service of high nickel alloy castings and their soundness as disclosed by Radiography examination, with

notes on the use of radiography as a development tool in foundry technique. (T.)

SPECTROGRAPHIC. "Quantitative Spectrographic Analysis," by D. M. Smith, *The Metal Industry*, vol. LIII, no. 21, Nov. 18, 1938, pp. 485-488.

This paper was recently presented to the Manchester Metallurgical Society. It deals with the practical aspect of quantitative spectrographic analysis. The value of the spectrograph as a scientific tool has been, perhaps, over-estimated by industrialists and under-estimated by academicians in the past in regard to its application to routine analysis. This paper, by an investigator at the British Non-Ferrous Metals Research Association, should help to clarify the limitations and advantages of the method. (A.)

Wear

DEFECTS. "Wear Resistance," by W. H. Spencer, *Steel*, vol. 103, no. 23, Dec. 5, 1938, pp. 60-62. In recent years, due to necessary mechanical changes in internal combustion engines, a wear condition known as "scuffing" has become a serious source of trouble. Research indicates the following causes of "scuffing." Whenever two pieces of iron or steel are rubbed together conditions may be present which will cause welding or adhesion, and the subsequent tearing apart of the surface leaves rough spots to cause scuffing. Conditions necessary to bring about this condition are metal to metal contact and a certain amount of pressure and temperature. Temperature or pressure or both may cause the oil film to fail and the consequent friction raises the surface temperature. However, application of a phosphate treatment to metallic wearing surfaces effectively eliminates "scuffing" and greatly reduces wear on the treated surfaces. (We.)

FARM TOOLS. "The Wear of Farm Tools," by H. Bornstein, *Metals and Alloys*, vol. 9, no. 11, Nov. 1938, pp. 291-295. This article offers the readers an expert's appraisal of a subject that is easily grasped. Power farming, as developed in recent years, has introduced many problems of wear, due to greater speed and severer service. Hence design cannot be separated from the metallurgy, and the best results are obtained by close co-operation of the designer and the metallurgical engineer. (We.)

GENERAL. "Wear Resistance of Cast Iron and Malleable Iron," by C. C. Hodgson and W. West, *Foundry Trade Journal*, vol. 60, no. 1168, Jan. 5, 1939, pp. 3-5. Extracts from a paper read before the Institution of Locomotive Engineers in London. Test specimens of a shape having various thicknesses were taken and experimented with. The general composition of the iron ran as follows: — T.C., 3.60; Si., 2.00; Mn., 1.90; S., 0.045; and P ranging from 0.29 to 0.98 per cent. These specimens were examined for Graphite, Porosity and Phosphorus effect on wear resistance. From the experiment it was concluded that the presence of graphite has to do with satisfactory wear resistance. (We.)

FUNDAMENTAL FOUNDRY INFORMATION

A Partial List of Available A. F. A. Publications

BOUND VOLUME OF TRANSACTIONS

Containing a wealth of material in papers and committee reports as presented before annual conventions. At present only 5 of these are available. The supplies are limited, but those which are available are for those most recent conventions when papers and reports have been most numerous and on problems and practices of current importance. These volumes are the foundation of any library of foundry reference books.

Publication No.	Vol.	No. Pages	Price to Members	Price to Non-Members
1	46 (1938)	950	\$3.00	\$15.00
2	45 (1937)	850	3.00	10.00
3	44 (1936)	624	2.00	6.00
4	43 (1935)	722	2.00	6.00
5	41 (1933)	608	2.00	6.00

Publication No. 8

Recommendations to Buyers of Castings. Committee Report.

6 pp. 6x9 (1931). Price \$0.15 per copy, \$5.00 per 100, \$40.00 per 1000.

Report of Committee on inquiries from consumers of jobbing castings on data required for intelligent estimation of castings costs. Report presented by A.F.A. Cost Committee before 1931 convention. Covers specific recommendations for buyers of gray iron, malleable and non-ferrous castings.

Publication No. 9

Foundry Costs

Heavy paper binding, 48 pages, 6x9, (1937). Price \$1.00. To members \$0.50.

Report of proceedings of 1937 convention session on foundry costs, containing cost system outlines for the malleable, gray iron and non-ferrous foundries.

Publication No. 10

Standard Pattern Color Charts

Price 5 cents each in lots of 5 to 50. \$4.00 per 100.

Recommended colors for wood patterns and core boxes. Approved by Joint Committee and adopted by Division of Simplified Practice, Bureau of Standards. Includes color page suitable for displaying on bulletin board in pattern shop and foundry. Poster 17x11-in.

Publication No. 25

Modern Automotive Foundry Sand Practice. by A. S. Nichols.

15 pp. 6x9 (1938). Price \$0.40. To members \$0.20.

Data of sand practices in seven foundries operated by automobile manufacturers were collected and are discussed. These foundries represent 6,000 tons of iron. Detail characteristics of synthetic sand bonded with other clays were also determined.

Publication No. 7

Alloy Cast Irons. 200 pp. 6x9, cloth binding (1939).

Price \$3.00. To members \$1.50. To be off the press about March 15.

A committee publication, designed to provide foundrymen, purchasers and potential users with comprehensive and authoritative information on the theory, applications, properties and production of alloy cast irons. Sections deal with (1) Metallurgical Theory of Effects of Alloying Elements, (2) Qualitative Effects of Alloys, (3) Quantitative Effects on Properties, (4) White and Chilled Alloy Irons, (5) Heat Treatment, (6) Foundry Practice, (7) Specific Applications, giving analysis, mechanical properties and service results of a wide variety of alloy cast irons used in commercial practice, and (8) Bibliography.

Publication No. 29

Steel Casting Design for the Engineer and the Foundryman. by C. W. Briggs, R. A. Gezelius and A. R. Donaldson.

Heavy paper binding, 68 pp., 6x9, (1938), 56 illustrations. Price \$0.50.

Steel casting design considered from two viewpoints, that of the designing engineer and that of the foundryman. A code, or nucleus, of a set of rules is presented for the engineer's guidance and experimental results on padding, external and internal chills, and controlled directional solidification are reported as of interest to foundrymen.

Publication No. 30

The Influence of Design on the Stress Resistance of Steel Castings. by R. A. Bull.

Heavy paper binding, 62 pp., 6x9, 22 illustrations, (1937). Price \$0.50. To members \$0.35.

A report prepared under direction of A.F.A. Steel Division Committee. Containing assembled data for the guidance of those who use and manufacture steel castings.

Publication No. 31

Steel Castings (A.F.A.-A.S.T.M. Symposium).

Heavy paper binding, 254 pp., 6x9, (1932). Price \$1.00.

A compilation of ten papers giving critical information and data on the properties of practically all classes of steel castings. Includes data on methods of molding, casting, use of alloys and heat treatment. Design and specifications fully treated. Extensive discussion.

Publication No. 32

Effect of Aluminum on the Properties of Medium Carbon Cast Steel. by C. E. Sims and F. B. Dahle.

Paper binding, 68 pp., 6x9, (1938), 24 illustrations. Price \$0.60. To members \$0.30.

This paper is the result of a comprehensive study undertaken to determine the conditions under which the beneficial effects of aluminum might be obtained without suffering any harmful loss in other properties.